SLV-226EE/X37DH/X37ME/X37PS

RMT-V115A

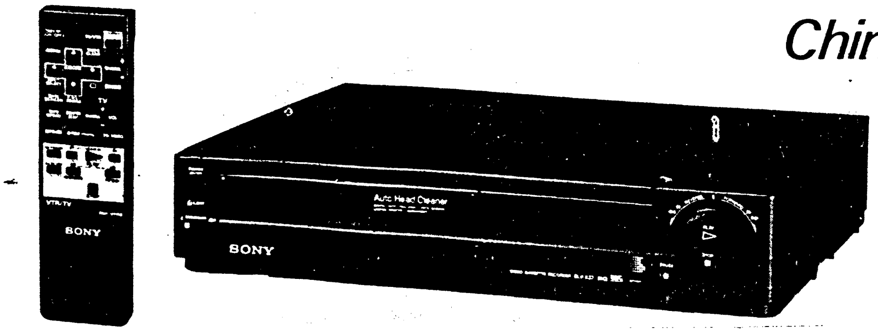
SERVICE MANUAL

East European Model
SLV-226EE

Chinese Model
SLV-X37DH

ME Model
SLV-X37ME

E Model
SLV-X37PS



Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

- Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS for MECHANICAL ADJUSTMENTS. (9-973-211-11)

SPECIFICATIONS

System

SLV-226EE/X37ME/X37PS model

Channel coverage	PAL B/G, SECAM B/G: VHF channels 2 to 12, S01 to S05, S1 to S20 UHF channels 21 to 69 SECAM D/K: VHF channels R1 to R12 UHF channels 21 to 69 PAL D/K: VHF channels C1 to C12 UHF channels C13 to C56
RF output signal	UHF channels 30 to 39

SLV-X37DH model

Channel coverage	PAL D/K: VHF channels C1 to C12 UHF channels C13 to C56 PAL I: UHF channels 21 to 69 SECAM D/K: VHF channels R1 to R12 UHF channels 21 to 69
RF output signal	UHF channels E30 to E39 (C22 to C26)
Aerial out	75-ohm asymmetrical aerial socket

Inputs and outputs

LINE IN	VIDEO IN (phono jack) (1) Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO IN (phono jack) (1) Input level: –7.5 dBs (0 dBs = 0.775 Vrms) Input impedance: more than 47 kilohms
LINE OUT	VIDEO OUT (phono jack) (1) Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO OUT (phono jack) (1) Rated output level: –7.5 dBs at load Impedance: 47 kilohms Output impedance: less than 10 kilohms

General

Power requirements	110-240 V AC, 50/60 Hz (SLV-X37DH/X37ME/X37PS model) 220-240 V AC, 50 Hz (SLV-226EE model)
Power consumption	20 W
Operating temperature range	5° C to 40° C (41° F to 104° F)
Storage temperature range	–20° C to 60° C (–4° F to 140° F)
Dimensions	430 x 91 x 363 mm (w/h/d) (17 x 3 1/2 x 14 3/8 inches) including projecting parts and controls
Weight	5.4 kg (12 lb 9 oz)

— Continued on next page —

MICROFILM

VIDEO CASSETTE RECORDER

SONY®

Accessories supplied

Wireless Remote Commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
AC power cord (1)
AC plug adaptor (1) (SLV-X37ME model only)
Screwdriver for RF channel adjustment (1)

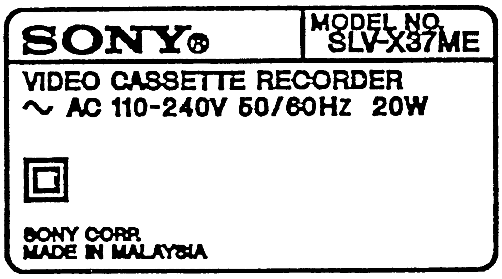
Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Design and specifications are subject to change without notice.

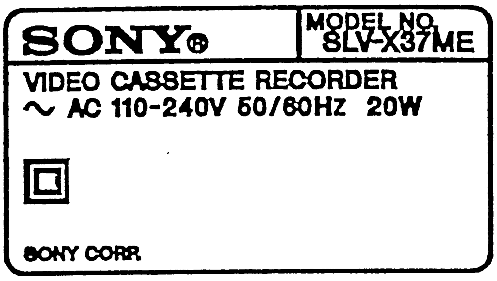
MODEL IDENTIFICATION

– Specification Label –



SONY® | MODEL NO. SLV-X37ME
VIDEO CASSETTE RECORDER
∿ AC 110-240V 50/60Hz 20W
SONY CORP.
MADE IN MALAYSIA

ME1 model



SONY® | MODEL NO. SLV-X37ME
VIDEO CASSETTE RECORDER
∿ AC 110-240V 50/60Hz 20W
SONY CORP.

ME2 model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SECTION 1
GENERAL

This section is extracted from instruction manual.

Chapter 2 - Getting Started

Connecting Peripheral Equipment

Checking Your TV Connections

Whenever you view video pictures as well as TV programs on your TV screen, connect the VTR and your TV properly. The connection between the VTR and TV varies depending upon the type of your TV receiver and aerial.
First check the type of your TV, and use the appropriate instructions in this section.

Before making connections do the following

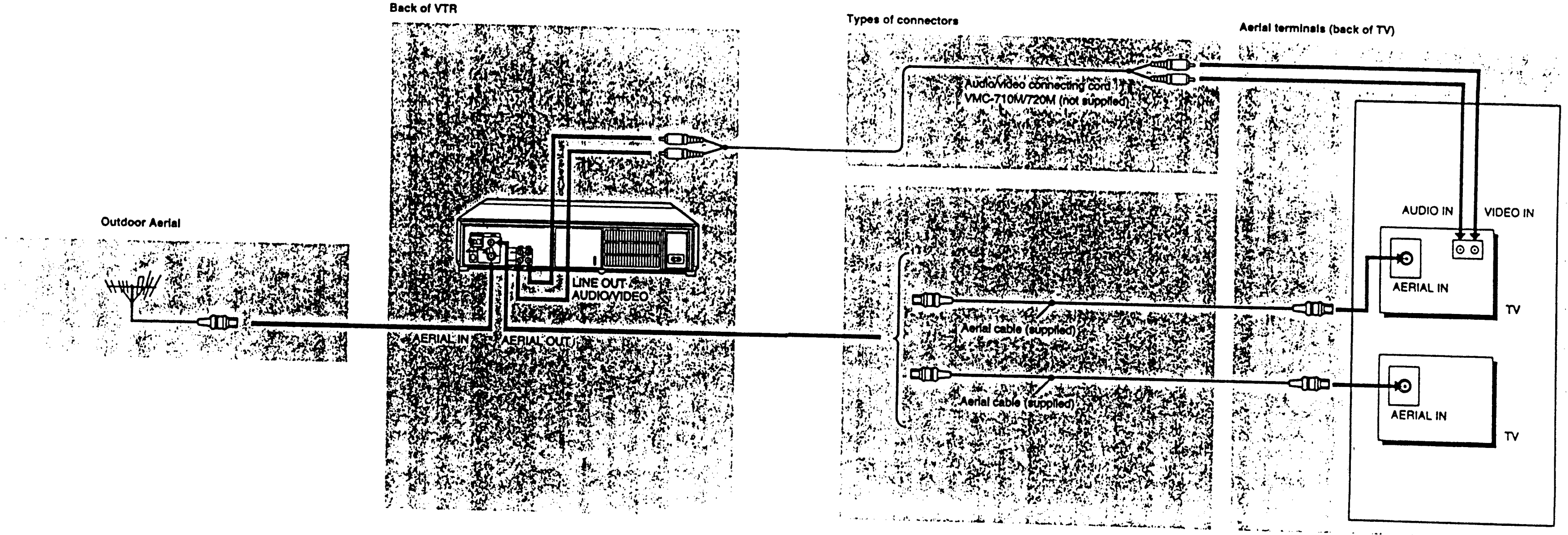
- Turn off the power to the VTR and the TV.
- Do not connect the AC power cords until all of the connections are completed.
- Make sure that all connections are firm. Loose connections may cause picture distortion.
- If your TV does not match the following examples, consult your nearest Sony dealer or qualified technician.

1 Disconnect the aerial from the aerial terminal of your TV.

2 Attach the connector to the AERIAL IN terminal on the back of the VTR. Make sure your TV has audio/video input jacks if you attach the audio/video connecting cord to the AUDIO/VIDEO output jacks on the VTR.

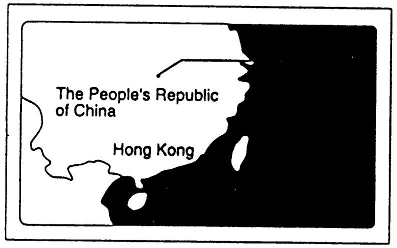
3 Find the type of aerial terminals or audio/video jacks you have on the back of your TV (see the illustration under step 4). Attach the connector(s) you are using (see the illustration below) to the back of the VTR (see the illustration under step 2).

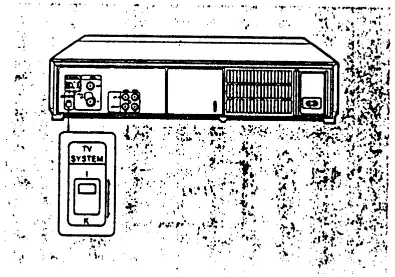
4 Attach the other end of the connector(s) to the back of the TV.


Outdoor Aerial
Back of VTR
LINE OUT
AUDIO/VIDEO
AERIAL IN
AERIAL OUT
Types of connectors
Audio/video connecting cord VMC-710M/720M (not supplied)
Aerial cable (supplied)
Aerial cable (supplied)
Aerial terminals (back of TV)
AUDIO IN
VIDEO IN
AERIAL IN
TV
AERIAL IN
TV

Selecting the TV System

You must set the TV SYSTEM selector at the rear of the VTR correctly so that your TV can receive the correct signal from your VTR.
Set the selector to either I: PAL I (for Hong Kong) or K: PAL D or PAL K (for the People's Republic of China).

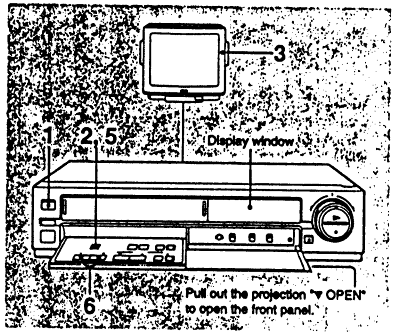




Note:
The sound is distorted if the TV SYSTEM output selector is set to the wrong position.

Tuning the VTR to Your TV

If you have connected your VTR and TV using only the aerial sockets, you have to adjust one of the television programme positions to receive the VTR's playback signals. If the TV/VTR connection is made using the audio/video input and output jacks, skip this procedure.



1 Press ON/STANDBY to turn on the VTR.

2 Press INPUT SELECT to light LINE in the display window.

3 Turn on the TV and select the UHF channel E32 (C24). The VTR is preset at the factory so that it outputs the UHF channel E32 (C24) band signal to the TV.
If the UHF channel E32 (C24) is used in your area, readjust the programme position for the VTR as described in "When the UHF channel E32 (C24) is used" on page 7.

4 Tune the TV so that a blue screen with the tape counter indication is displayed on the TV screen.

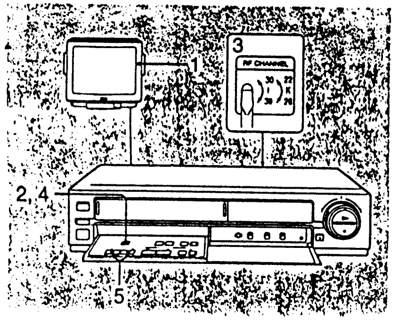
5 Press INPUT SELECT so that the programme number appears in the display window.

6 Press PROGRAM +/– to check to see if the TV screen changes to a different programme.

Now you have tuned your TV to receive the VTR's playback picture. When you play back a cassette, set the TV to the programme position selected above.

When the UHF channel E32 (C24) is used

Readjust the programme position for the VTR.



1 Select a programme position on the TV between UHF channels E30 and E39 (UHF channels C22 and C26), where the TV displays no picture and a rustling sound or where no sound is heard at all.

2 Press INPUT SELECT to light LINE in the display window.

3 Turn the RF CHANNEL screw with the supplied screwdriver to the position where the TV clearly displays a blue screen with the tape counter.

4 Press INPUT SELECT so that the programme number appears in the display window.

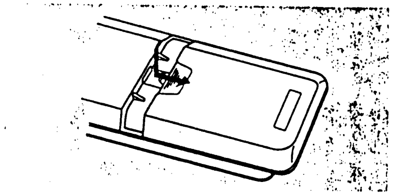
5 Press PROGRAM +/– to check to see if the TV screen changes to a different programme.

If the TV signal is too strong
Set the LOCAL/DX switch at the rear of the VTR to LOCAL with a screwdriver.
Normally set this switch to DX.

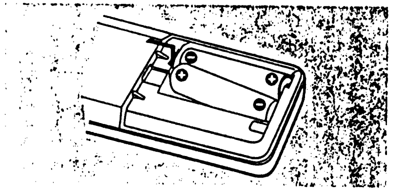
Preparing the Remote Commander

Inserting Batteries

1 Slide open and remove the cover.



2 Insert two R6 (size AA) batteries so that the + and – polarities match the polarity diagrams inside the battery compartment.



3 Replace and close the cover.

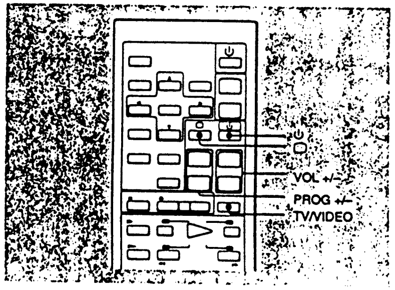
Note:
With normal operation, batteries last for approximately six months. If the Remote Commander will not be used for an extended period of time, remove the batteries to avoid possible damage from battery leakage.

How to Use the Remote Commander

When you operate the VTR using the Remote Commander, point it at the remote sensor located on the VTR. For the location of the remote sensor, see "Identifying Parts and Controls" on page 26.

How to Control Your TV with the Remote Commander

This Remote Commander can also control your Sony TV with the ▣ mark. Buttons used to control the TV are shown below.

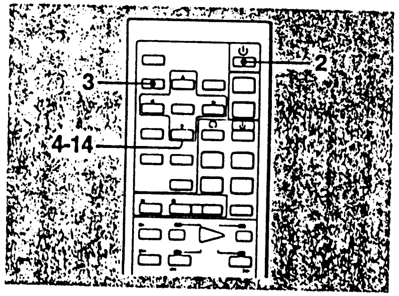


⏻:	Press to turn the power of the TV on and off.
▭:	If the power of the TV is not turned on by pressing ⏻, press this button to turn it on.
VOL +/–:	Press to increase (+) or decrease (–) the volume of the TV.
TV/VIDEO:	Press to select the input of the TV: TV programme broadcasts from the aerial or playback signal from the VTR.
PROG +/–:	Press to change the programme position of the TV.

Setting the Time and Date Clock

You can set the VTR time and date clock on the TV screen using the Remote Commander.

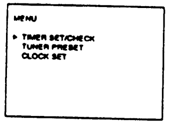
Example: To set to 15:30, 27th November, 1992



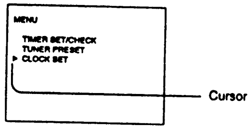
1 Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR.
This should be the same position as that selected on page 6.

2 Press ⏻ to turn on the VTR.

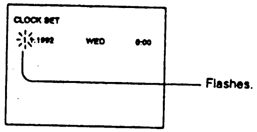
3 Press MENU.
The main MENU appears on the TV screen.


MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET

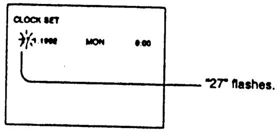
4 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.


MENU
TIMER SET/CHECK
TUNER PRESET
▶ CLOCK SET
Cursor

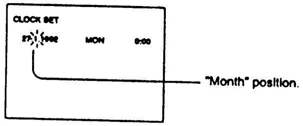
5 Press EXECUTE.
"1.1.1992 WED 0:00" appears.
The leftmost "1", in the "day" position, is flashing.


CLOCK SET
1.1.1992
WED
0:00
Flashes.

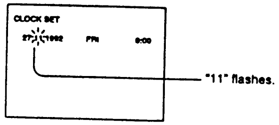
6 Press ▲ or ▼ until "27" appears in the day position.
The day of the week is automatically set.


CLOCK SET
.1.1992
MON
0:00
"27" flashes.

7 Press ▶ to make the "month" position flash.

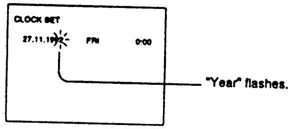

CLOCK SET
27.1.1992
MON
0:00
"Month" position.

8 Press ▲ or ▼ until "11" appears in the month position.

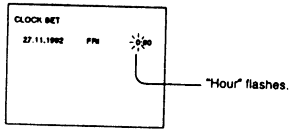

CLOCK SET
27.1992
FRI
0:00
"11" flashes.

(Continued)

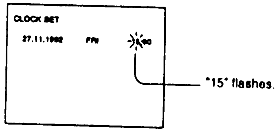
9 Press ▶ to make the "year" position flash.
If you want to change the year, press ▲ or ▼.


CLOCK SET
27.11.1992
FRI
0:00
"Year" flashes.

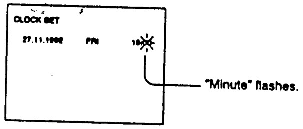
10 Press ▶ to make the "hour" flash.


CLOCK SET
27.11.1992
FRI
0:00
"Hour" flashes.

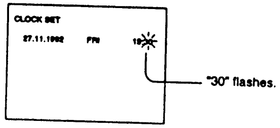
11 Press ▲ or ▼ until "15" appears in the hour position.


CLOCK SET
27.11.1992
FRI
:00
"15" flashes.

12 Press ▶ to make the "minute" flash.


CLOCK SET
27.11.1992
FRI
15:
"Minute" flashes.

13 Press ▲ or ▼ until "30" appears in the minute position.


CLOCK SET
27.11.1992
FRI
15:
"30" flashes.

14 Press EXECUTE.
The clock is set to 15:30.

To Recall the Time and Date on Screen

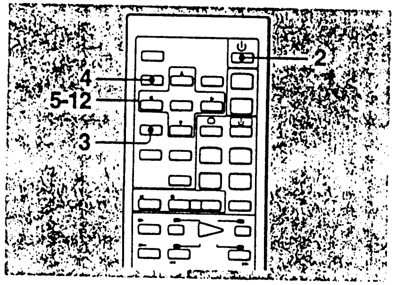
Press MENU to display the main MENU, select CLOCK SET and press EXECUTE. To return to the original screen, press MENU.

Notes:
- You can set the clock except during timer recording, timer recording standby, and quick-timer recording.
- When the time and date are displayed, the clock keeps running as long as no changes are made. The seconds are not reset to 00 when you return to the original screen.

Presetting the Active Channels

To watch and record TV programmes, you must preset the channels on the VTR using the PROG +/– buttons.
You can preset the preferred channels using the Remote Commander and the TUNER PRESET display.

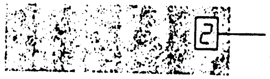
Presetting Desired Channels



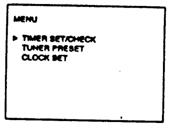
1 Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

2 Press ⏻ to turn on the VTR.

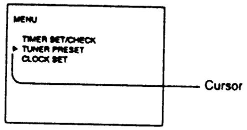
3 Press INPUT SELECT so that the programme position number appears in the display window.


2
Programme position number

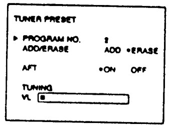
4 Press MENU.
The main MENU appears on the TV screen.


MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET

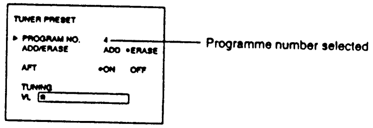
5 Press ▲ or ▼ to move the cursor (▶) to TUNER PRESET.


MENU
TIMER SET/CHECK
▶ TUNER PRESET
CLOCK SET
Cursor

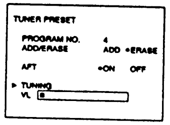
6 Press EXECUTE.
The TUNER PRESET display appears.


TUNER PRESET
▶ PROGRAM NO. 1
ADD/ERASE ADD •ERASE
AFT •ON OFF
TUNING
VL

7 Press ◀ or ▶ to select the desired programme position number.


TUNER PRESET
▶ PROGRAM NO. 4
ADD/ERASE ADD •ERASE
AFT •ON OFF
TUNING
VL
Programme number selected

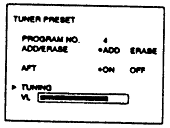
8 Press ▲ or ▼ to move the cursor to TUNING.


TUNER PRESET
PROGRAM NO. 4
ADD/ERASE ADD •ERASE
AFT •ON OFF
▶ TUNING
VL

(Continued)

Presetting the Active Channels

9 Press ◀ or ▶ to tune in the desired channel.
The picture appears when the first channel received in your area is detected, and the channel is preset to the selected programme position.
If ERASE has been selected, ADD/ERASE is switched to ADD automatically, and the screen returns to the blue background after an interval of 5 seconds.


TUNER PRESET
PROGRAM NO. 4
ADD/ERASE •ADD ERASE
AFT •ON OFF
▶ TUNING
VL

10 If the channel detected in step 9 is not the desired one, press ◀ or ▶ until the picture of the desired channel appears.

Note:
When you keep ◀ or ▶ pressed, the channels are scanned in the following order:

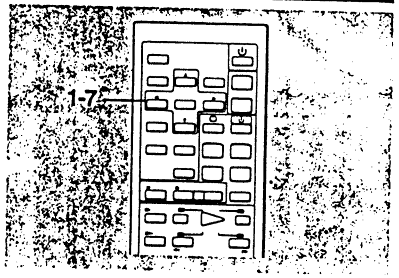
Band indicator	Corresponding channels		
	PAL I	PAL D/K	SECAM D/K
VL (VHF low)	—	VHF C1 to C5	VHF R1 to R5
VH (VHF high)	—	VHF C6 to C12	VHF R6 to R12
U (UHF)	UHF 21 to 69	UHF C13 to C56	UHF 21 to 69

11 Press ▲ to move the cursor to PROGRAM NO., and repeat steps 7 to 10 to preset other channels.

12 Press EXECUTE when all the desired channels have been preset.
The display returns to the original screen with the tape counter.

When the sound is distorted or noisy
Set the TV SYSTEM selector on the front panel to the "I" position. (Normally you can receive the optimum sound with the "AUTO" position.) .

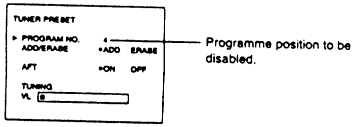
Disabling Unwanted Programme Positions



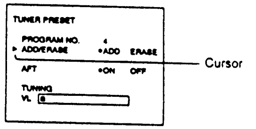
1 Call up the TUNER PRESET menu on the TV screen. Follow steps 4 to 6 in "Presetting Desired Channels" on page 11.

2 Press ▲ or ▼ to move the cursor (▶) to PROGRAM NO.

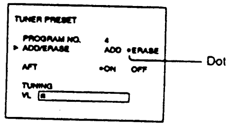
3 Press ◀ or ▶ to select the programme position number to be disabled.


TUNER PRESET
▶ PROGRAM NO. 4
ADD/ERASE •ADD ERASE
AFT •ON OFF
TUNING
VL
Programme position to be disabled.

4 Press ▲ or ▼ to move the cursor to ADD/ERASE.


TUNER PRESET
PROGRAM NO. 4
▶ ADD/ERASE •ADD ERASE
AFT •ON OFF
TUNING
VL
Cursor

5 Press ▶ to move the dot (•) to ERASE.


TUNER PRESET
PROGRAM NO. 4
▶ ADD/ERASE ADD •ERASE
AFT •ON OFF
TUNING
VL
Dot

6 Repeat steps 2 to 5 to disable other programme positions.

7 Press EXECUTE.
When pressing PROG +/–, the disabled programme positions are skipped.

To reactivate a disabled programme position
Select ADD instead of ERASE in step 5 above.

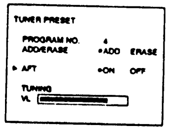
Fine-tuning

Leave the Auto Fine Tuning (AFT) set to ON, and the AFT function fine-tunes the picture. If the picture quality of a particular programme position is unacceptable, fine-tune it manually using the following procedure.

1 Select the programme position to be fine-tuned with PROG +/–.

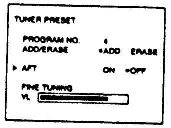
2 Display the TUNER PRESET menu referring to steps 4 to 6 in "Presetting Desired Channels" on page 11.

3 Press ▲ or ▼ to move the cursor (▶) to AFT.



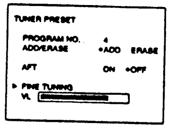
TUNER PRESET
PROGRAM NO. 4
ADD/ERASE •ADD ERASE
▶ AFT •ON OFF
TUNING
VL

4 Press ▶ to move the dot (•) to OFF.
FINE TUNING appears.



TUNER PRESET
PROGRAM NO. 4
ADD/ERASE •ADD ERASE
▶ AFT ON •OFF
FINE TUNING
VL

5 Press ▲ or ▼ to move the cursor to FINE TUNING.
The picture appears.



TUNER PRESET
PROGRAM NO. 4
ADD/ERASE •ADD ERASE
AFT ON •OFF
▶ FINE TUNING
VL

6 Press ◀ or ▶ until you get the best picture.

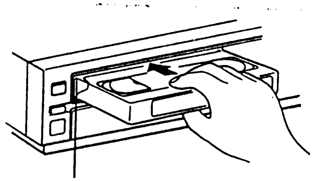
If you are still unable to get a better picture
Press ▲ to move the cursor to AFT, and press ◀ to move the dot (•) to ON.

7 Press EXECUTE.

Chapter 3 - Basic Operations

Playback

Inserting a Video Cassette



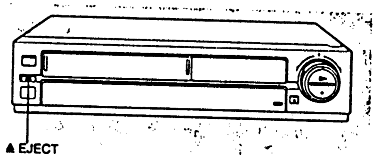
Cassette compartment

1 Insert a video cassette as shown above.

2 Gently press the center of the front side of the cassette until the mechanism draws it into the compartment. When the cassette has been loaded, the cassette indicator (▭) lights in the display window and the VTR turns on automatically.

Note:
If you insert a cassette without a safety tab, playback starts automatically (AUTO PLAYBACK function).

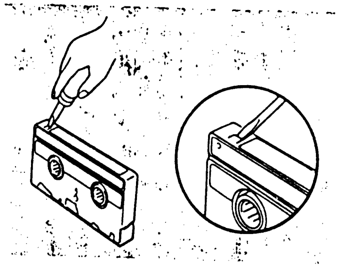
Ejecting the Video Cassette



Press ▲ EJECT on the VTR.
You can eject the cassette even when the power is off, so long as the AC power cord is plugged into the wall outlet. When you press ▲ EJECT, the power is turned on. After ejecting the cassette, the power automatically shuts off.

Protecting Your Cassette against Accidental Erasure

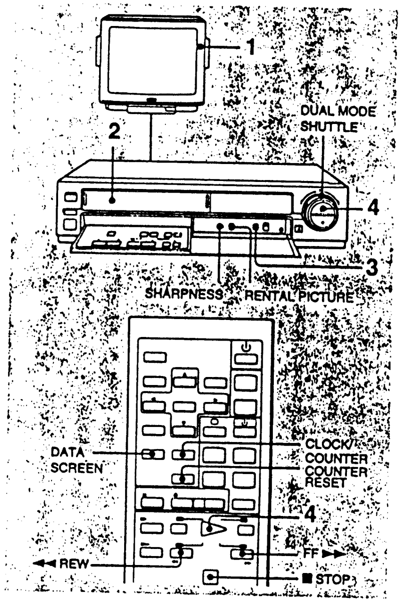
Cassettes have a safety tab to protect against accidental recording.
Break off the safety tab with a screwdriver or other tool.
If the safety tab is removed, the cassette is ejected when you try to record on it.



To record on a cassette with the safety tab broken off, simply cover the tab hole with adhesive tape.

Playing Back a Cassette

Before playing back a cassette, check that all the connections are firm and made correctly.



1 Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

2 Insert a cassette.
The VTR automatically turns on.

3 Set the COLOR SYSTEM on the VTR to conform to the colour system of the cassette to be played back:

Colour system	Selector position
PAL, ME SECAM	PAL/MESECAM
NTSC	NTSC PB ON PAL TV or NTSC 4.43*

* If the playback picture is not clearly displayed on the screen, select the NTSC 4.43 position.

4 Press ▶ PLAY
Playback begins.
When the tape reaches the end, the VTR automatically rewinds the tape to the beginning (auto rewind). The power of the VTR remains ON.

To stop playback
Press ■ STOP.

To stop playback for a moment
Press ❚❚ PAUSE.
Press ❚❚ PAUSE again to resume playback.

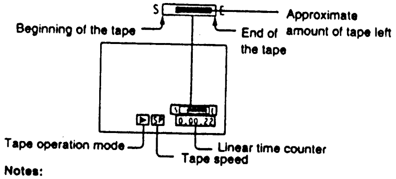
To fast-forward the cassette during stop mode
Press ■ STOP, and turn the DUAL MODE SHUTTLE ring on the VTR clockwise (▶▶), or press FF ▶▶ on the Remote Commander.

To rewind the cassette
Press ■ STOP, and turn the DUAL MODE SHUTTLE ring on the VTR counterclockwise (◀◀), or press ◀◀ REW on the Remote Commander.

To start playback automatically after rewinding the cassette
Turn the DUAL MODE SHUTTLE ring on the VTR to the left (◀◀).
While holding the ring, press ▶ PLAY on the VTR.
During rewind, the AUTO indicator lights up in the display window.

Notes:
- When you play back a cassette recorded in the NTSC colour system, note that the following occurs:
  - The data screen does not appear on the screen, even if you press the DATA SCREEN button.
  - The picture may go black and white, shake or shrink a bit. It depends on the TV you have.
  - When you rewind or advance the tape after you have played it, the VTR may not run smoothly, since it takes a while for the VTR to count the length of tape left before rewinding or advancing the tape.
- When the PAL and NTSC colour systems are mixed on a tape, the counter does not show the exact counting, since each colour system has a different counting cycle.
- When a tape recorded in the LP mode is played back on this VTR, only a blue screen appears.

About the Data Screen
The data screen appears automatically. To turn off the data screen, press DATA SCREEN.



Notes:
- The remaining tape length displayed is approximate. Therefore, use it only as an approximate reference.
- When you insert a short video cassette tape such as an E-30 or non-standard commercially available video cassette tape, the remaining tape length indicator may not function correctly.
- The data screen can only be called up when in normal playback mode.

Resetting the Tape Counter

The tape counter in the display window helps you to locate a certain scene after playback. Press COUNTER RESET on the Remote Commander to set the counter to the "0H00M00S" (counter zero) position before playing back the tape (the tape counter is automatically reset to zero whenever a cassette is inserted.) The VTR keeps counting the length of the tape being played back. Note, however, that the tape counter does not count the positions without video signals recorded.

Note:
If the display window shows the current clock, not the tape counter, press CLOCK/COUNTER on the Remote Commander to switch the display to tape counter.

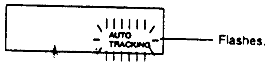
Enhancing Picture Quality

To reduce streaks and/or snow
Select RENTAL PICTURE on the VTR.

To adjust the sharpness of the picture
Turn SHARPNESS control on the VTR to SHARP for a sharper picture or to SOFT for a softer picture.

To adjust tracking
Normally you can get optimum tracking since the auto tracking function activates in the following cases:
- when the cassette is loaded for the first time.
- when the picture is distorted by scratches on the tape.
- when the AUTO TRACKING indicator is turned on by pressing TRACKING AUTO/MANUAL after the picture is adjusted manually.

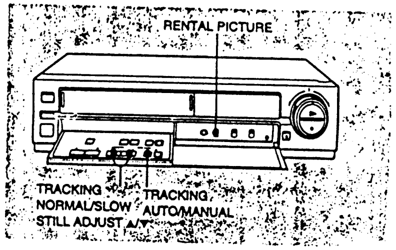
The AUTO TRACKING indicator flashes while the VTR is searching for the best tracking condition, and lights when the best possible playback picture is obtained.



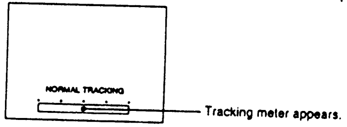
Auto head cleaner
The auto head cleaner built into the VTR automatically cleans the video heads when a cassette is loaded or unloaded. If the effect of head cleaning is not sufficient even after a cassette has been loaded/unloaded several times, clean the heads using the Sony T-25CL video head cleaning cassette.

Playing Back a Cassette Recorded on another VTR

When playing back a cassette recorded on another VTR, the tracking condition is automatically adjusted. You can also adjust the tracking condition and the sharpness manually according to the following instructions.



To adjust tracking manually
Press either ▲ or ▼ for the best possible picture. The tracking meter appears on the TV screen and the AUTO TRACKING indicator turns off.
When manual adjustment proves unsatisfactory, press both of the TRACKING NORMAL/SLOW and STILL ADJUST.
The tracking condition indicator returns to the centre position.



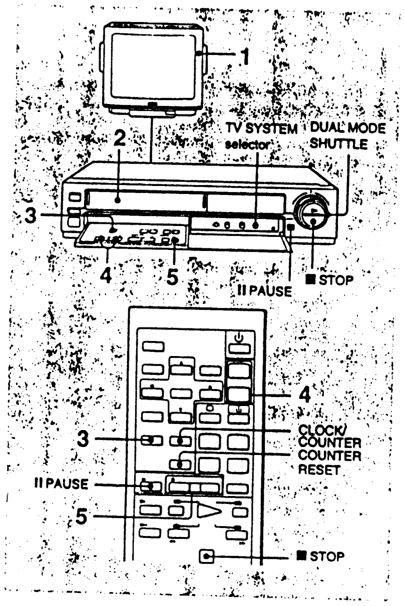
To return to the auto tracking adjustment
Press TRACKING AUTO/MANUAL.

To reduce playback streaks and/or snow
Select RENTAL PICTURE on the VTR.

Recording

This section shows you how to record TV programmes. You can also watch a TV programme on the TV screen while recording another.
Before recording, check to see that all the connections have been made correctly.

Recording TV Programmes



1 Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

2 Insert the cassette.
The VTR turns on automatically.

3 Press INPUT SELECT to light the programme position number indicator in the display window.

4 Select the programme position to be recorded with PROG +/– (or PROGRAM +/– on the VTR).

Note:
When the sound is distorted or noisy, set the TV SYSTEM selector to the "I" position.

5 Press the two ● REC buttons on the Remote Commander simultaneously, or the ● REC button on the VTR.
Recording starts.
When the tape reaches the end, the VTR automatically rewinds the tape, and the power remains on.

To pause recording
Press II PAUSE.

To stop recording
Press ■ STOP.

To turn off the data screen information
Press DATA SCREEN on the Remote Commander.
To display it again, press DATA SCREEN.
Data screen information is not recorded on the tape.

The remaining tape length indicator
- The remaining tape length shows the approximate length of tape left.
- When you insert a short tape such as an E-30 or a non-standard commercially available tape, the remaining tape length indicator may not function correctly.

Maximum Recording Time of a Cassette

Recording is possible in the SP mode only with this VTR. Maximum recording/playback time is listed in the table below.

Cassette Tape	Recording/Playback time (SP mode)
E-240	4 hr.
E-180	3 hr.
E-120	2 hr.
E-60	1 hr.

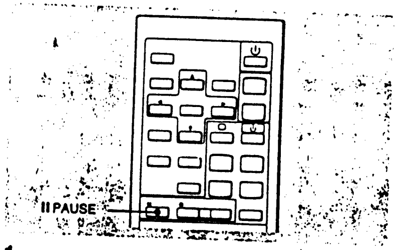
Watching One Programme While Recording Another

Select the programme you want to watch on the TV.

If you use a colour monitor
You cannot watch another programme during recording unless the monitor has an internal TV tuner.

Editing Out Unwanted Scenes

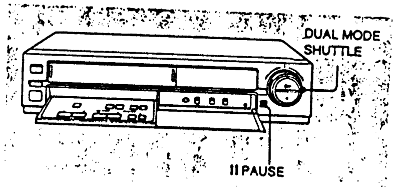
While recording



1 Press II PAUSE when an unwanted scene appears.
Recording stops.

2 Press II PAUSE again to resume recording at the desired scene.

By recording over unwanted scenes



1 Press II PAUSE when an unwanted scene appears.
Recording stops.

2 Turn the DUAL MODE SHUTTLE ring on the VTR to the left and search for the point from which you wish to continue recording.

3 Release the DUAL MODE SHUTTLE ring at the desired point.
After an instant of still mode, the VTR automatically enters the recording pause mode.

4 Press II PAUSE to resume recording at the desired scene.

Note:
When the recording pause mode lasts for approximately 5 minutes or more, the VTR enters the stop mode.

Timer Recording

The Timer Recording function allows you to preset your VTR to record up to eight programmes within a one-month period. You perform this procedure from the TIMER SET/CHECK screen on your TV.

As a First Step

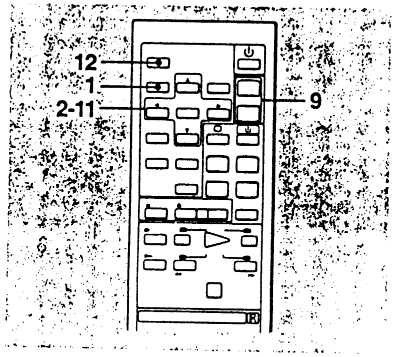
Before setting the timer, make sure that:

- the time and date clock is set correctly. (See "Setting the Time and Date Clock" on page 9.)
- the cassette is long enough to record all the programmes.
- the safety tab on the cassette is intact. If you insert a cassette with no safety tab and press TIMER REC (ON/OFF), the cassette is automatically ejected from the VTR.
- the VTR and the TV are both turned on.

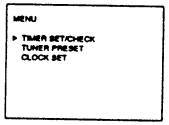
Setting the Timer

Example:

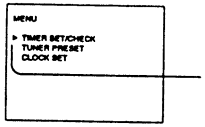
Here's how to record a programme broadcast on programme position 26 from 20:00 to 21:55 on Friday, 27th November, 1992.



1 Press MENU.
The main MENU appears.

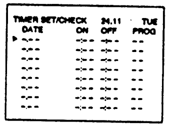

MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET

2 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.

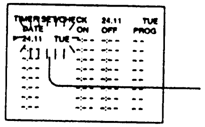

MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET

Cursor

3 Press EXECUTE.
The TIMER SET/CHECK display appears on the screen. To reset the clock, refer to "Setting the Time and Date Clock" (page 9).

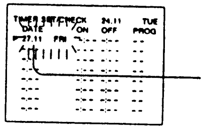

TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG

4 Press ▶ to make sure that today's date is flashing. If it isn't, reset the clock to the correct time. See "Setting the Time and Date Clock" (page 9).


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
24.11
TUE

Flashes.

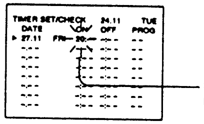
5 Press ▲ to set the month and date to 27.11 FRI.
The day of the week is automatically set.


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
27.11
FRI

Set the "DATE".

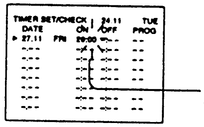
(Continued)

6 Press ▶ to make the hour section under "ON" flash and then ▲ or ▼ until "20" appears.


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
27.11
FRI
20:

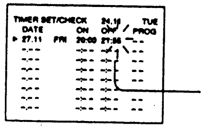
Set the hour of the turn-on time.

7 Press ▶ to make the minute section under "ON" flash and then ▲ or ▼ until "00" appears.


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
27.11
FRI
20:00

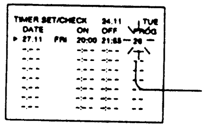
Set the minute of the turn-on time.

8 Press ▶.
The end time flashes under "OFF".


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
27.11
FRI
20:00
21:55

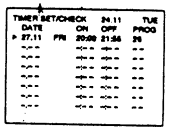
Set the turn-off time.

9 Press ▶ to make the PROG section flash, then press ▲ or ▼ until 26 appears.
Only the programme positions set in the VTR appear.
You can also use the PROG +/–.


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
27.11
FRI
20:00
21:55
26

Set the programme position.

10 Press ▶ to store the setting.
When all of the settings stop flashing you have completed the setting. To preset another programme, move the cursor to the next line and repeat steps 4 to 10.


TIMER SET/CHECK
24.11
TUE
DATE
ON
OFF
PROG
27.11
FRI
20:00
21:55
26

11 Press EXECUTE.

12 Press TIMER REC (ON/OFF).
The VTR is in now in standby mode for timer recording and the TIMER REC indicator appears in the display window. If no cassette has been inserted or the tape is at the end, the TIMER REC indicator does not appear.

The VTR automatically turns on, starts recording at the preset time, and turns off after recording ends.

To stop timer recording

Press TIMER REC (ON/OFF).
When you set the VTR to the timer recording standby mode, you can record any previously preset programmes. The VTR turns on automatically to record the first preset programme. When it finishes recording the power automatically shuts off.

Notes:

- To change or correct a setting before pressing EXECUTE, press ◀ to return to the item you wish to change.
- If a power interruption occurs during timer recording, recording stops and your VTR shuts off. If power is restored within one hour, and it is before the recording end time, recording starts again from that point. If the interruption lasts for more than one hour, any presettings are erased and you must reset the time and date for your programmes. Note that the tape counter returns to "0H00M00S".

Daily/Weekly Recording

You can preset your VTR for daily or weekly recording. Daily recording records the same programme every day of the week while weekly recording records the same programme on the same day, every week.

1 Follows steps 1 to 3 in "Setting the Timer:" (page 19).

2 Press ▶.
The "DATE" position flashes.

3 Press ▲ or ▼ until the desired date appears.

Example: If today is 27th November

Indicator	Setting
27.11 FRI	On 27th November
28.11 SAT	On 28th November
26.12 SAT	1 month later
EVERY SUN	Every Sunday
EVERY MON	Every Monday
EVERY SAT	Every Saturday
MON-FRI	Every day except Saturday and Sunday
MON-SAT	Every day except Sunday
SUN-SAT	Every day

4 Follow steps 6 to 12 in "Setting the Timer" (page 20).

To stop timer recording
Press TIMER REC (ON/OFF).

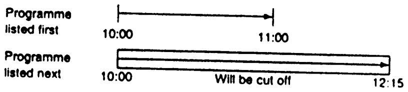
Buttons Operable during Timer Recording

TIMER REC (ON/OFF)	To stop timer recording.
COUNTER RESET	Reset the counter to "0H00M00S".
DATA SCREEN	Allows you to display data screen information.
MENU	Allows you to check the timer settings.

Overlapping Timer Recordings

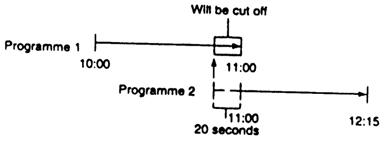
Case 1
If you preset two programmes to record at the same time ...

The programme listed first on the TIMER SET/CHECK display has priority over the other programmes. The timer settings for lower priority programmes are erased from the TIMER SET/CHECK display when recording begins for the first programme.



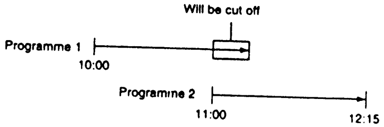
Case 2
If you preset programme 2 to start recording at the same time you preset programme 1 to finish recording ...

The last 20 seconds of programme 1 is not recorded because the VTR enters the recording pause mode for programme 2 before programme 1 is finished.



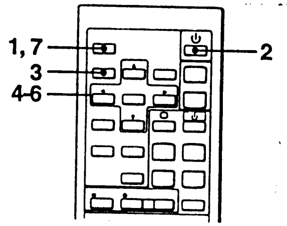
Case 3
If you set programme 2 to start recording before programme 1 is finished recording ...

Programme 2 starts recording before programme 1 has finished.



Checking the Timer Settings

You can display your timer settings to confirm the programmes you wish to record.

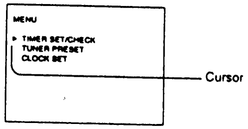


1 Press TIMER REC (ON/OFF).
The TIMER REC indicator in the display window turns off.

2 Press ⏻.

3 Press MENU.
The main MENU appears.

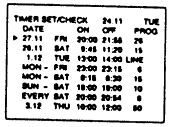
4 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.



```
MENU

▶ TIMER SET/CHECK
  TUNER PRESET
  CLOCK SET
```

5 Press EXECUTE.
The TIMER SET/CHECK display appears.



```
TIMER SET/CHECK   24.11     TUE
  DATE         ON    OFF   PROG
▶ 27.11  FRI  20:00 21:55   26
  28.11  SAT   9:45 11:20   15
   1.12  TUE  13:00 14:00 LINE
  MON -  FRI  23:00 23:15    6
  MON -  SAT   6:15  6:30   15
  SUN -  SAT  18:00 19:00   10
  EVERY  SAT  20:00 20:54    8
   3.12  THU  10:00 12:00   50
```

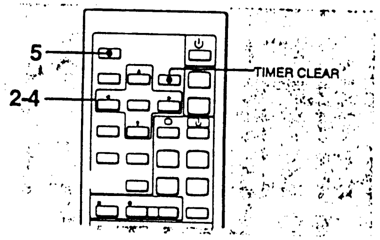
6 Press EXECUTE to return to the original screen.

7 Press TIMER REC (ON/OFF).
The VTR returns to the timer recording standby mode.

Notes:
- If you preset a programme to record only once, that setting is erased from the TIMER SET/CHECK display when recording has finished.
- To check the timer settings during timer recording, follow steps 3 to 6 above.

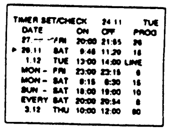
Changing or Canceling the Timer Settings

You can change or cancel the timer settings by referring to the TIMER SET/CHECK display.



1 Display the TIMER/SET CHECK menu on the TV screen by following steps 1 to 5 in "Checking the Timer Settings" on this page.

2 Move the cursor to the programme you wish to change or cancel.



```
TIMER SET/CHECK   24.11     TUE
  DATE         ON    OFF   PROG
  27.— —/FRI  20:00 21:55   26
▶ 28.11  SAT   9:45 11:20   15
   1.12  TUE  13:00 14:00 LINE
  MON -  FRI  23:00 23:15    6
  MON -  SAT   6:15  6:30   15
  SUN -  SAT  18:00 19:00   10
  EVERY  SAT  20:00 20:54    8
   3.12  THU  10:00 12:00   50
```

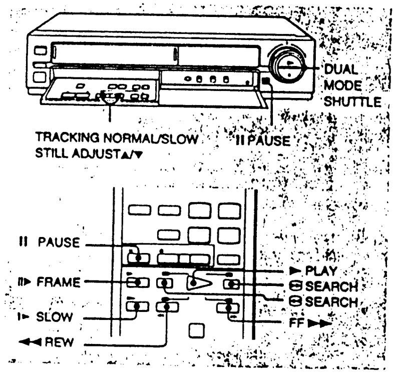
3 To make changes, press ◀ or ▶ to make the item to be changed flash, and then press ▲ or ▼ to make the changes.
To cancel, press TIMER CLEAR.

4 Press EXECUTE to complete the changes.
The original screen returns.

5 Press TIMER REC (ON/OFF) to return to the timer recording standby mode.

Variable Speed Playback

Using either the DUAL MODE SHUTTLE ring on your VTR or the Remote Commander, you can play back tapes at a variety of forward and reverse speeds. You can also freeze a picture using the **II** *PAUSE button.*



Pausing the Picture

During playback, press II PAUSE to freeze the picture in one position.

To resume normal playback, press either ▶ PLAY or II PAUSE.

If you leave your VTR in pause mode, normal playback resumes after approximately 5 minutes.

If bands appear on the top or bottom of the screen while in pause mode

Press I▶ SLOW to change to the slow-motion play mode, and adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▲/▼.

If the picture shakes while in pause mode

Adjust the picture with STILL ADJUST ▲/▼.

Picture Search

During playback, keep pressing ◀◀ REW (reverse direction) or FF ▶▶ (forward direction).

A high-speed picture without sound appears on the TV screen.

To resume normal playback, release the button at a desired scene.

Locked Picture Search

This feature allows you to lock in and view a high-speed picture while playing or pausing a tape.

During playback or in the pause mode, press ⊖ SEARCH (forward) or ⊖ SEARCH (reverse) on the Remote Commander.

To resume normal playback, press ▶ PLAY.

Slow-motion Picture

During playback or in the pause mode, press I▶ SLOW.

To resume normal playback, press ▶ PLAY.

Frame-by-frame Picture

In the pause mode, press II▶ FRAME to advance the picture one frame.

To resume normal playback, press ▶ PLAY .

Pausing the Picture Momentarily during Fast-forward or Rewind

During fast-forward, turn the DUAL MODE SHUTTLE ring on the VTR clockwise or press FF ▶▶ on the Remote Commander.

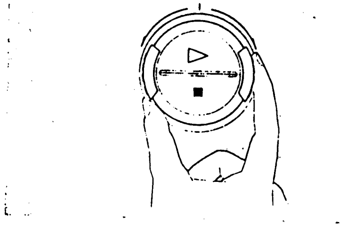
During rewind, turn the DUAL MODE SHUTTLE ring counterclockwise or press ◀◀ REW on the Remote Commander.

To return to the fast-forward or rewind mode, release the ring or button.

Variable speed playback using the DUAL MODE SHUTTLE ring

You can also enjoy variable speed playback using the DUAL MODE SHUTTLE ring on the VTR.

In any playback mode, turn the DUAL MODE SHUTTLE ring in either the forward or reverse direction as shown. When you release the ring, normal playback resumes. (If you turn the ring in the pause mode, however, releasing the ring pauses a picture. To resume normal playback, press ▶ PLAY.)

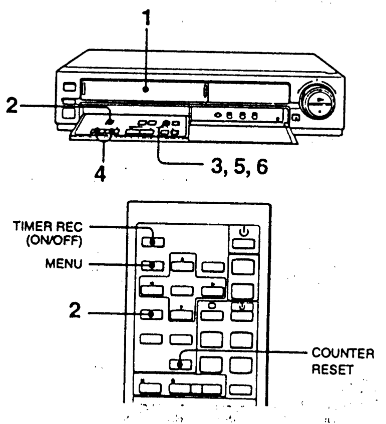


Note:
Noise may appear during variable speed playback.

Quick-Timer Recording

This function is convenient for recording programmes without going through the entire timer setting procedure. You can set the recording duration in increments of 30 minutes, for up to eight hours.

You can also use this function, during recording, to turn off the VTR after the programme is over.



1 Insert a cassette with a safety tab on it.

2 Press INPUT SELECT to light up the programme position number indicator in the display window.

3 Press QUICK TIMER on the VTR.
If a cassette with its safety tab removed has been inserted, the VTR ejects the cassette.

4 Press PROGRAM +/– on the VTR to select the programme for recording while the programme display is flashing in the display window.

5 Press QUICK TIMER within one minute after selecting the programme to start recording.
The REC indicator appears in the display window.

Note:
If you don't press QUICK TIMER within one minute after selecting the programme position, the VTR shuts off.

6 Press QUICK TIMER to decide the recording duration. Each press on the button increases the recording duration in increments of 30 minutes as shown below.

→ 0:00 → 0:30 → 1:00 → …… → 7:30 → 8:00 —

Turn off the TV, and the VTR continues recording.
The recording duration decreases minute by minute until 0:00 appears, and then the VTR turns off automatically.

To stop quick-timer recording
Press TIMER REC (ON/OFF).

To extend the recording duration during recording
Press QUICK TIMER the desired number of times. One press on the button increases the duration by 30 minutes.

If the VTR is in the standby mode for recording
Press TIMER REC (ON/OFF) to turn off the TIMER REC indicator in the display window and do steps 3 to 6.

Notes:
- You cannot change or erase timer settings during quick-timer recording.
- If the power interruption lasts less than one hour and power is restored before the recording end time, recording resumes from that instant.

Buttons operable during Quick-timer Recording

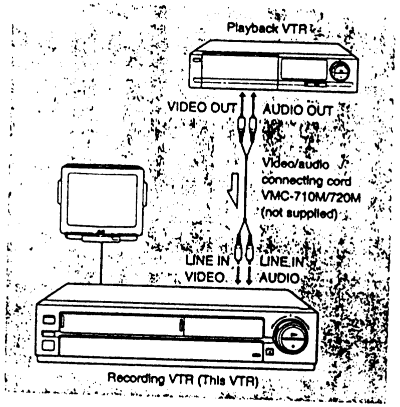
TIMER REC (ON/OFF)	To stop quick-timer recording.
COUNTER RESET	Reset the counter to "0H00M00S".
DATA SCREEN	Allows you to display data screen information.
MENU	Allows you to check the timer settings.

Editing with Another VTR

Using this VTR as the Recording VTR

Connection

You can connect another VTR (the playback VTR) to the LINE IN VIDEO/AUDIO jacks at the rear of this VTR.


Playback VTR
VIDEO OUT
AUDIO OUT
Video/audio connecting cord VMC-710M/720M (not supplied)
LINE IN VIDEO
LINE IN AUDIO
Recording VTR (This VTR)

1. Insert a cassette for recording into this VTR (used for recording).
2. Turn on the other VTR (the playback VTR) and insert the source cassette.
3. On this VTR, press INPUT SELECT to light up LINE on the VTR display.
4. On the other VTR, search for the desired playback start point and press ❙❙ PAUSE to enter the playback pause mode.
5. On this VTR, search for the desired recording start point, press ❙❙ PAUSE on the Remote Commander and then press the two ● REC buttons to enter the recording pause mode.
6. Release ❙❙ PAUSE on this VTR and press ❙❙ PAUSE on the other VTR.
   Recording of the signals from the other (playback) VTR starts.
7. When finished, press ■ STOP on both of the VTRs.

When the recording VTR is a stereo type
Make connections using the VMC-910MS/920MS connecting cord (not supplied).

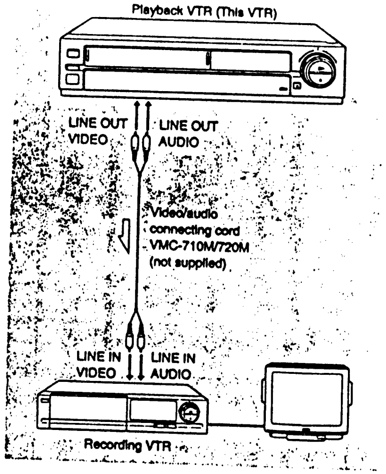
When connecting the VTRs
Do not connect both LINE IN and LINE OUT jacks on the two VTRs simultaneously. Doing so may cause a humming noise.

Using this VTR as the Playback VTR

Connection

You can connect another VTR (the recording VTR) to the LINE OUT VIDEO/AUDIO jacks at the rear of this VTR. On the other VTR, select external video or line, and make the necessary settings for recording.

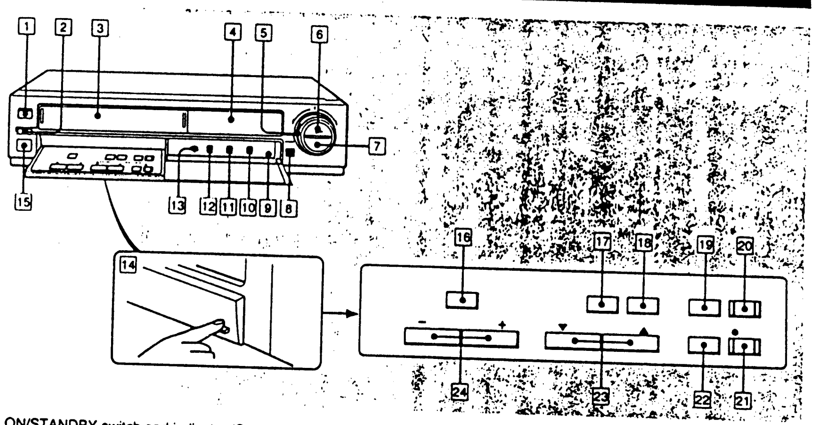
Note:
Recording of video sources based on the NTSC colour system cannot be guaranteed.


Playback VTR (This VTR)
LINE OUT VIDEO
LINE OUT AUDIO
Video/audio connecting cord VMC-710M/720M (not supplied)
LINE IN VIDEO
LINE IN AUDIO
Recording VTR

1. Turn on the other VTR (the recording VTR) and insert a cassette for recording.
2. Insert a source cassette into this VTR (the playback VTR).
3. On this VTR, search for the desired playback start point and press ❙❙ PAUSE to enter the playback pause mode.
4. On the other VTR, search for the desired recording start point and enter the recording pause mode.
5. Press ❙❙ PAUSE on the other VTR and then release ❙❙ PAUSE on this VTR.
   Recording of the signals from the playback VTR starts.
6. When finished, press ■ STOP on both of the VTRs.

Identifying Parts and Controls

Front Panel


1
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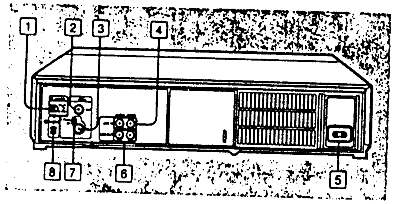
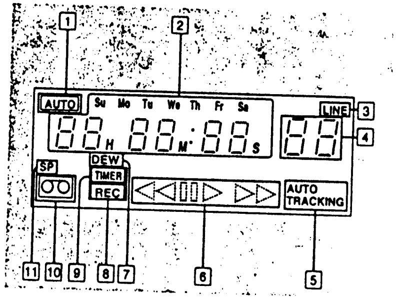
1 ON/STANDBY switch and indicator (See page 6.)
2 ▲ EJECT button (See page 14.)
3 Cassette compartment (See pages 14 and 17.)
4 Display window (See page 6.)
5 DUAL MODE SHUTTLE ring (See page 23.)
6 ► PLAY button (See page 15.)
7 ■ STOP button (See pages 15 and 17.)
8 ❙❙ PAUSE button (See pages 15 and 17.)
9 CL (clear) button (See page 30.)
10 TV SYSTEM selector (See pages 12 and 17.)
11 COLOR SYSTEM selector (See page 15.)
12 RENTAL PICTURE switch (See pages 15 and 16.)
13 SHARPNESS SOFT/SHARP control (See page 16.)
14 ▼ OPEN - projection (See page 6.)
15 Remote sensor (See page 8.)
16 INPUT SELECT button (See pages 6 and 24.)
17 CLOCK/COUNTER button (See page 16.)
18 COUNTER RESET button (See pages 16 and 21.)
19 QUICK TIMER button (See page 24.)
20 TIMER REC (ON/OFF) button (See pages 19 and 24.)
21 ● REC button (See page 17.)
22 TRACKING AUTO/MANUAL button (See page 16.)
23 TRACKING NORMAL/SLOW and STILL ADJUST ▲/▼ buttons (See pages 16 and 23.)
24 PROGRAM +/– buttons (See page 7.)

Rear Panel



1. RF CHANNEL screw (See page 7.)
2. AERIAL OUT connector (See page 4.)
3. AERIAL IN connector (See page 4.)
4. LINE IN AUDIO/VIDEO jacks (See page 25.)
5. AC IN connector (See page 4.)
6. LINE OUT AUDIO/VIDEO jacks (See pages 4 and 25.)
7. LOCAL/DX switch (See page 7.)
8. TV SYSTEM I/K output selector (See page 6.)

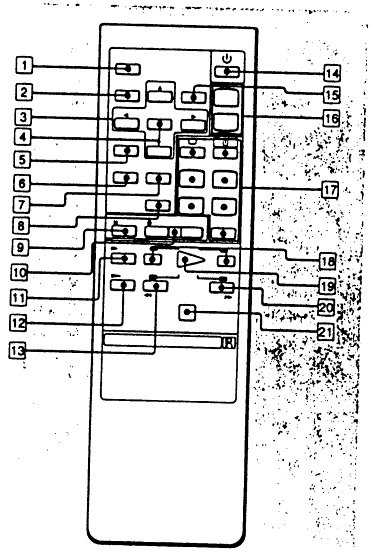
Indicators in the Display Window



1. AUTO indicator (See page 15.)
2. Linear time counter and clock (See page 10.)
3. LINE indicator (See pages 6 and 25.)
4. Programme number (See page 11.)
5. AUTO TRACKING indicator (See page 16.)
6. Tape operation indicator (See page 15.)
7. DEW (moisture condensation) indicator (See page 30.)
8. REC (recording) indicator (See page 24.)
9. TIMER recording indicator (See pages 20 and 24.)
10. Cassette indicator (appears when a cassette is loaded) (See page 14.)
11. Tape speed indicator

Remote Commander

The buttons on the Remote Commander with the same name or mark as those on the VTR have the same function. You can also use the buttons in the "TV" section to remotely control Sony TVs with the 🅱 mark.



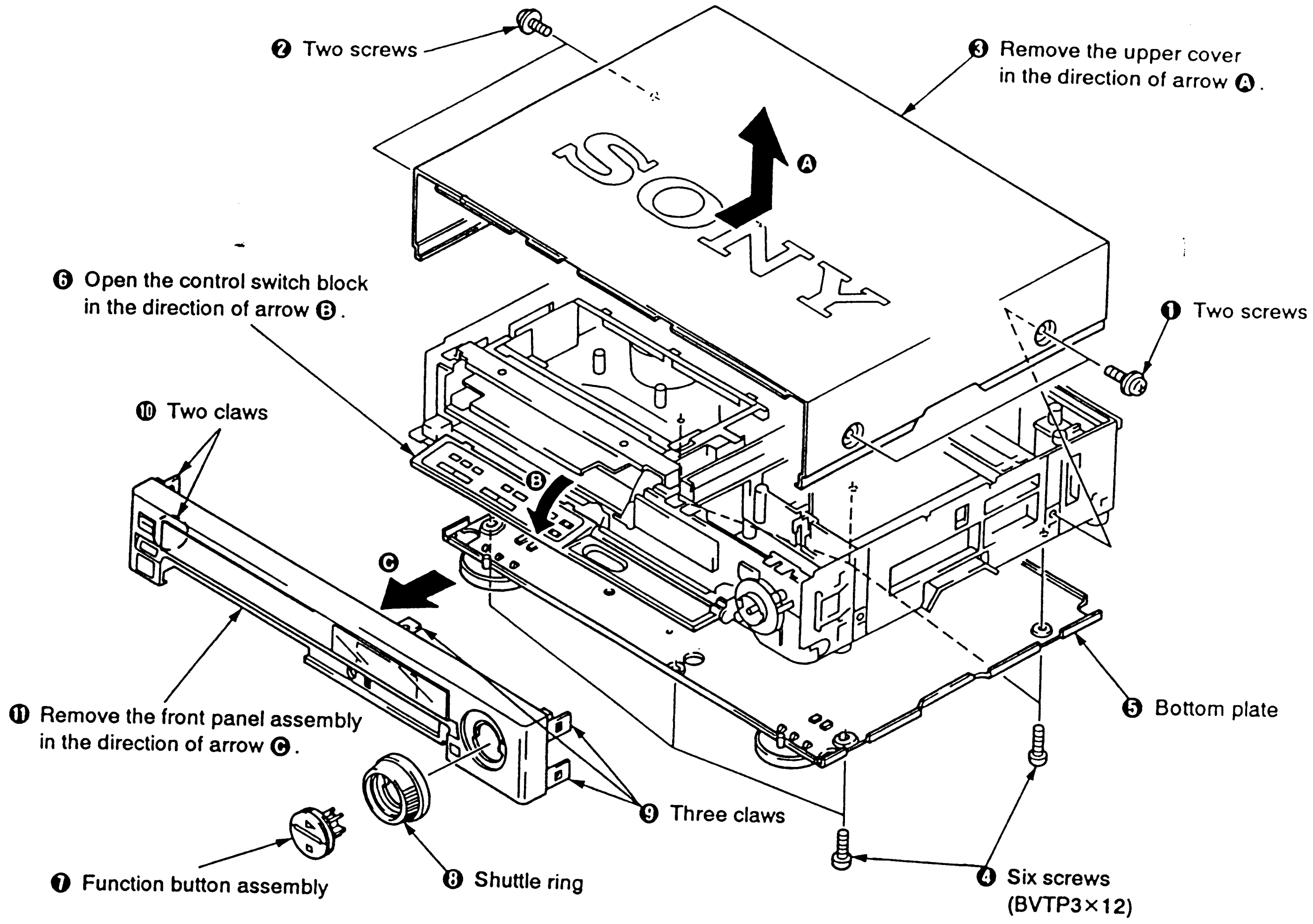
1. TIMER REC (ON/OFF) button (See page 19.)
2. MENU button (See page 9.)
3. ◀▲▶▼ Cursor buttons (See page 9.)
4. EXECUTE button (See page 9.)
5. INPUT SELECT button (See pages 11 and 24.)
6. DATA SCREEN button (See page 15.)
7. CLOCK/COUNTER button (See page 16.)
8. COUNTER RESET button (See pages 16 and 21.)
9. II PAUSE button (See page 15.)
10. ● REC buttons (See page 17.)
11. II▶ FRAME button (See page 23.)
12. I▶ SLOW button (See page 23)
13. ◀◀ REW button (See page 15.)
14. ⏻ (power) button (See page 8.)
15. TIMER CLEAR button (See page 22.)
16. PROG +/– buttons (See pages 17 and 20.)
17. TV control buttons (See page 8.)

    ⏻ (power) button
    ○ TV power (on/off) button
    TV PROG +/– buttons
    TV VOL (volume) +/– buttons
    TV/VIDEO buttons

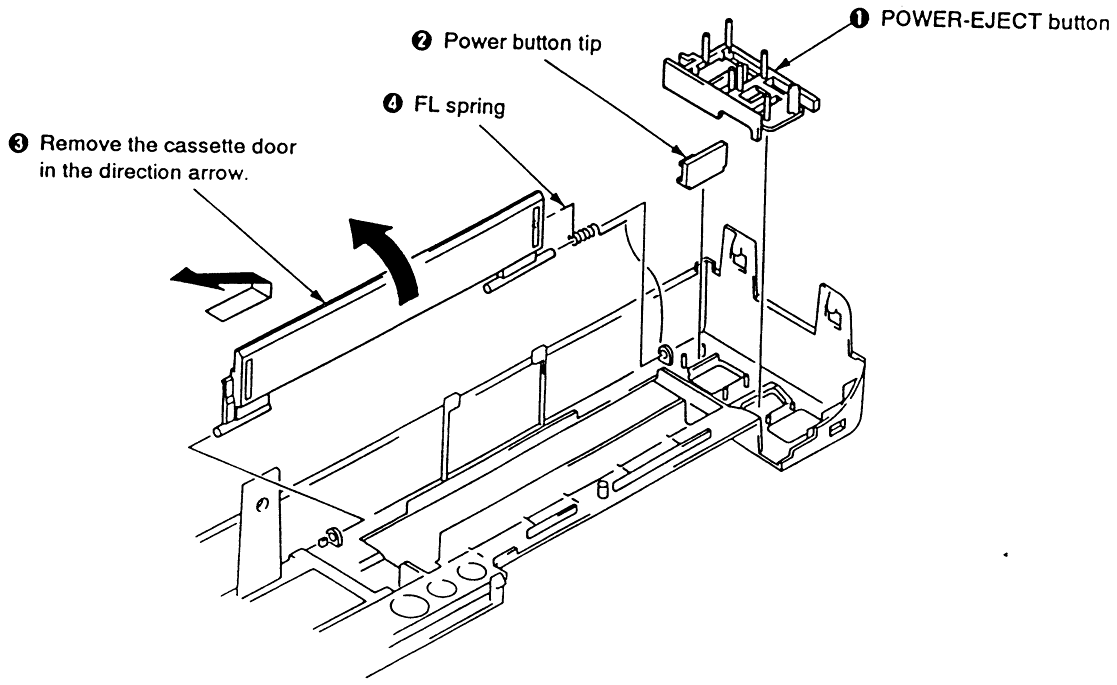
18. ⊖/⊖ SEARCH buttons (See page 23.)
19. ▶ PLAY button (See page 15.)
20. ▶▶ FF button (See page 15.)
21. ■ STOP button (See page 15.)

SECTION 2
DISASSEMBLY

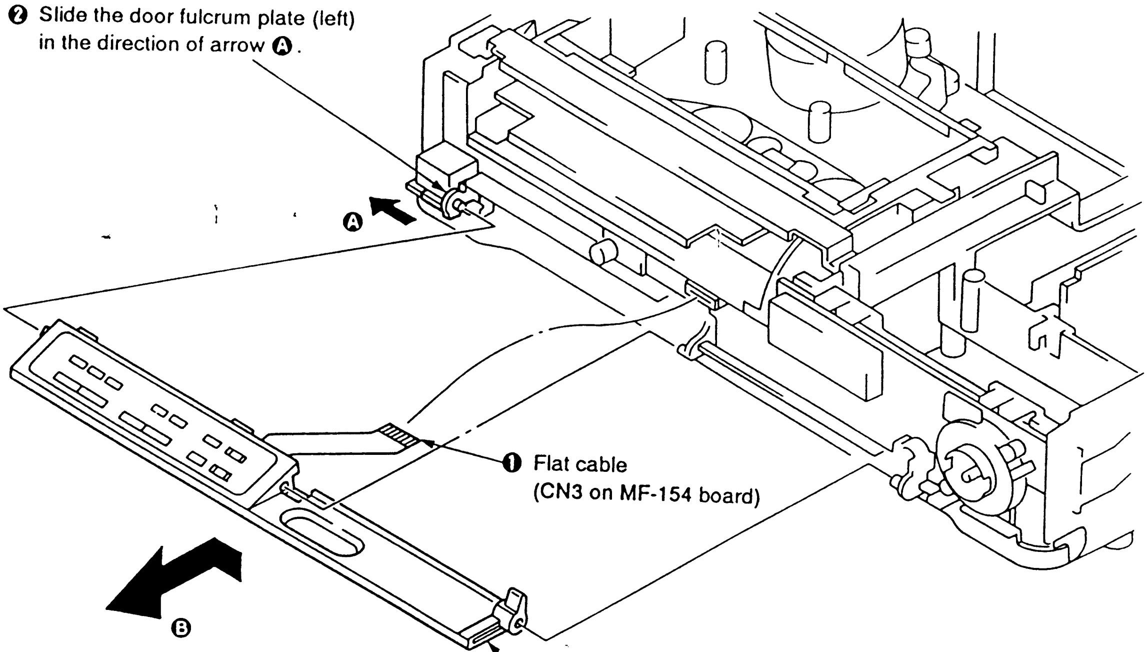
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


❷ Two screws
❸ Remove the upper cover in the direction of arrow Ⓐ.
Ⓐ
SONY
❻ Open the control switch block in the direction of arrow Ⓑ.
Ⓑ
❶ Two screws
❿ Two claws
Ⓒ
⓫ Remove the front panel assembly in the direction of arrow Ⓒ.
❺ Bottom plate
❾ Three claws
❼ Function button assembly
❽ Shuttle ring
❹ Six screws (BVTP3×12)

2-2. REMOVAL OF CASSETTE DOOR


❶ POWER-EJECT button
❷ Power button tip
❹ FL spring
❸ Remove the cassette door in the direction arrow.

2-3. REMOVAL OF CONTROL SWITCH BLOCK

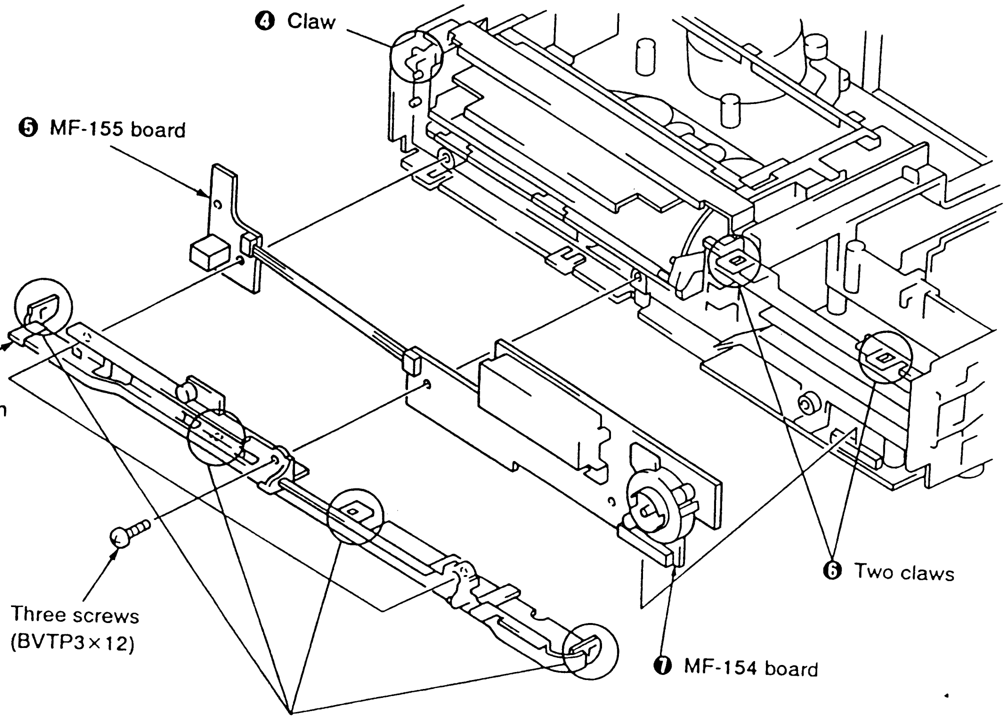


❶ Flat cable
(CN3 on MF-154 board)

❷ Slide the door fulcrum plate (left)
in the direction of arrow Ⓐ.

❸ Remove the control switch block
in the direction of arrow Ⓑ.

2-4. REMOVAL OF MF-154 AND MF-155 BOARDS



❶ Three screws
(BVTP3×12)

❷ Four claws

❸ Frame escutcheon

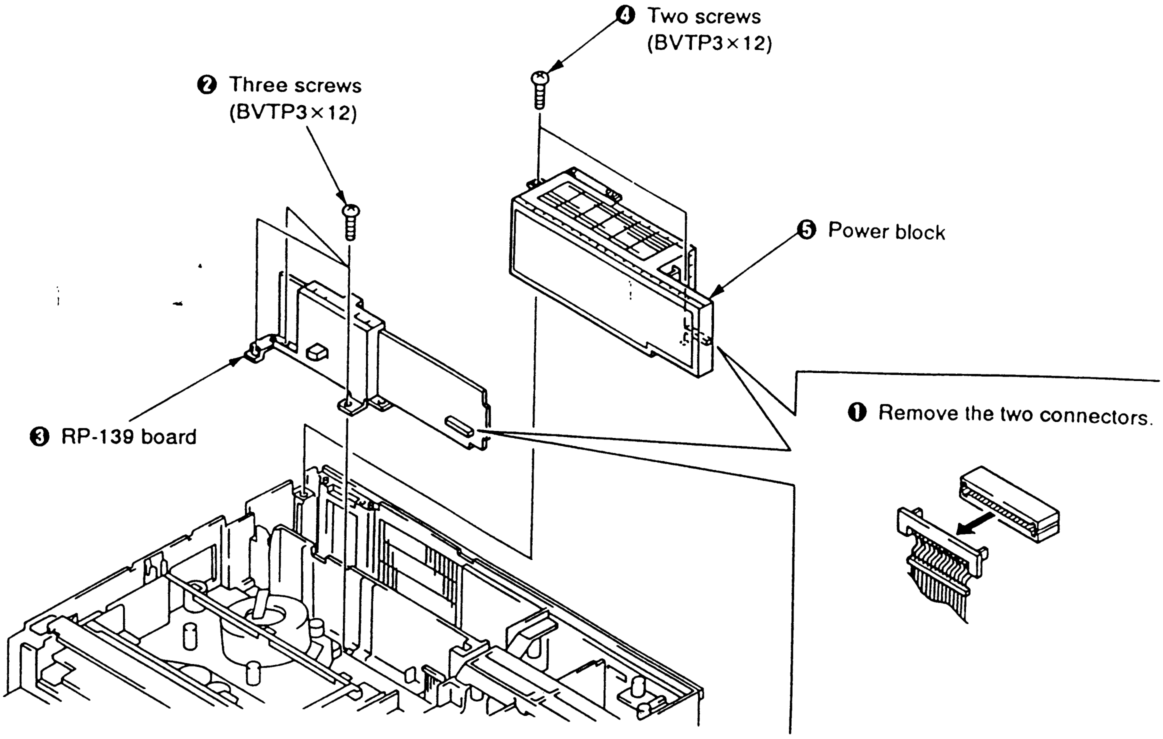
❹ Claw

❺ MF-155 board

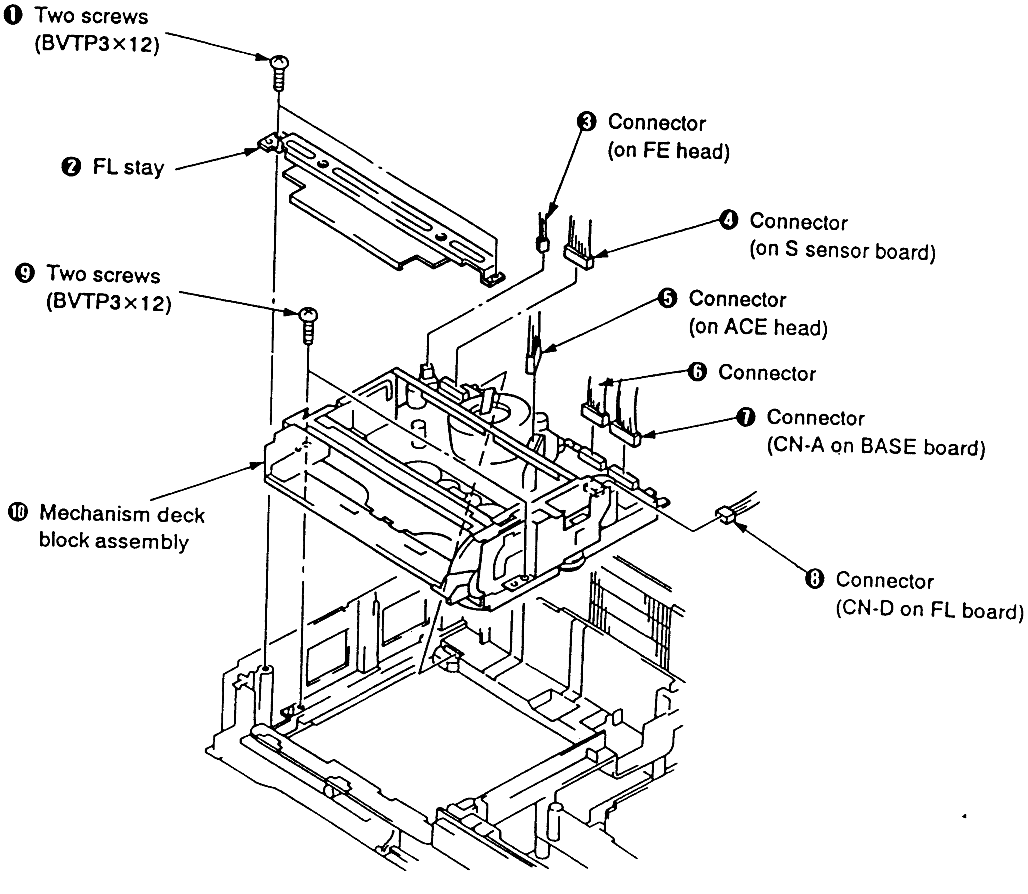
❻ Two claws

❼ MF-154 board

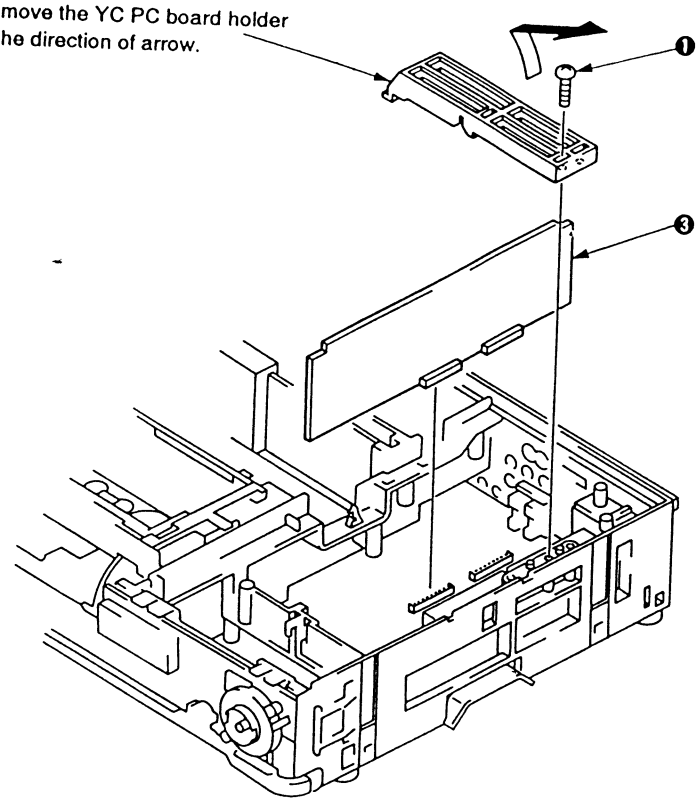
2-5. REMOVAL OF RP-139 BOARD AND POWER BLOCK


❹ Two screws
(BVTP3×12)
❷ Three screws
(BVTP3×12)
❺ Power block
❸ RP-139 board
❶ Remove the two connectors.

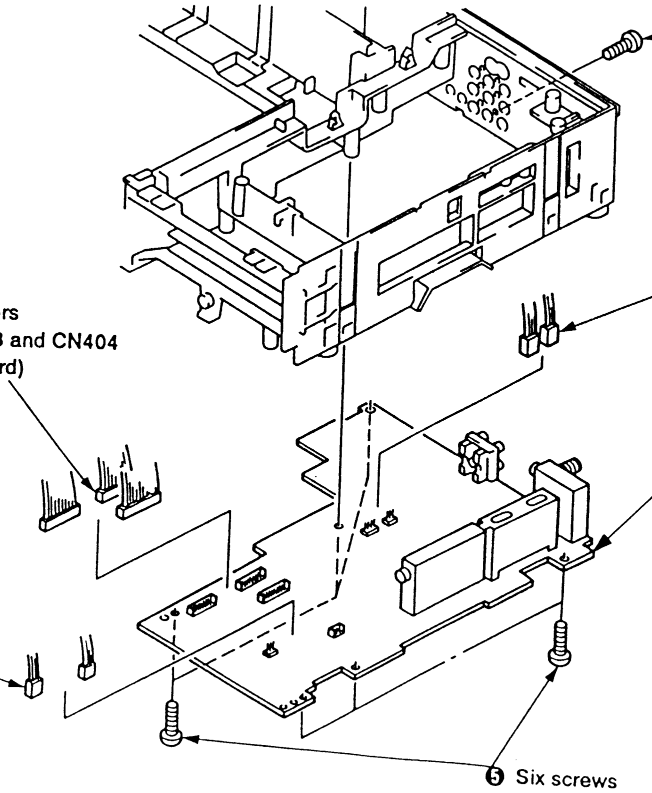
2-6. REMOVAL OF MECHANISM DECK BLOCK ASSEMBLY


❶ Two screws
(BVTP3×12)
❷ FL stay
❸ Connector
(on FE head)
❹ Connector
(on S sensor board)
❾ Two screws
(BVTP3×12)
❺ Connector
(on ACE head)
❻ Connector
❼ Connector
(CN-A on BASE board)
❿ Mechanism deck
block assembly
❽ Connector
(CN-D on FL board)

2-7. REMOVAL OF YC-120 BOARD

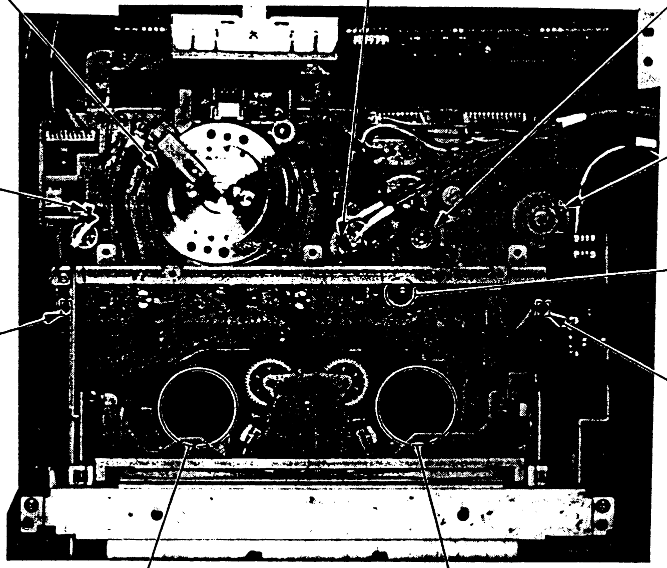

❷ Remove the YC PC board holder in the direction of arrow.
❶ Screw (BVTP3×12)
❸ YC-120 board

2-8. REMOVAL OF MA-119 BOARD

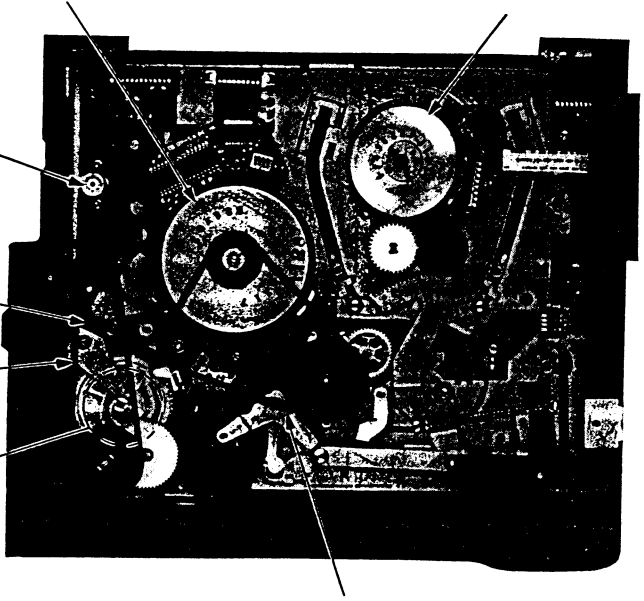

❹ Screw (BVTP3×12)
❷ Three connectors (CN401, CN403 and CN404 on MA-119 board)
❶ Two connectors (CN201 and CN202 on MA-119 board)
❻ MA-119 board
❸ Two connectors (CN402 and CN405 on MA-119 board)
❺ Six screws (BVTP3×12)

2-9. INTERNAL VIEWS

— Top Side —

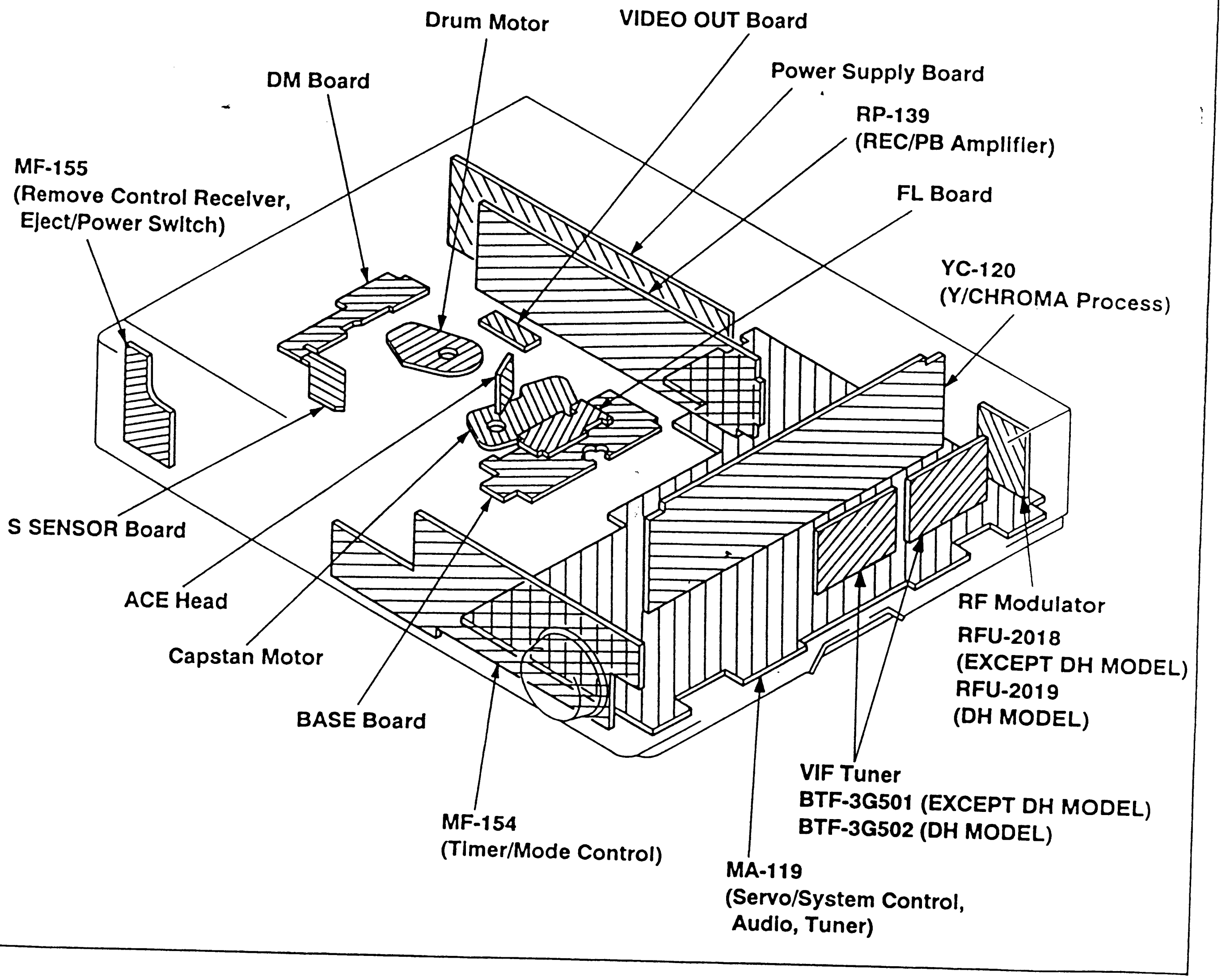

M901
Drum assembly (Cylinder assembly)
3-949-186-01
Upper drum (TPB-011)
3-949-187-01
ACE head assembly
(ACE head HV225127)
3-947-081-01
Pinch roller arm assembly
3-947-004-01
FE head assembly
(FE head HV113001)
3-946-972-01
M903
Loading motor assembly
3-946-917-01
M902
Capstan motor
(F2QKB38)
S reel end sensor
T reel end sensor
S reel table assembly
3-947-997-01
T reel table assembly
3-947-002-01

— Bottom Side —

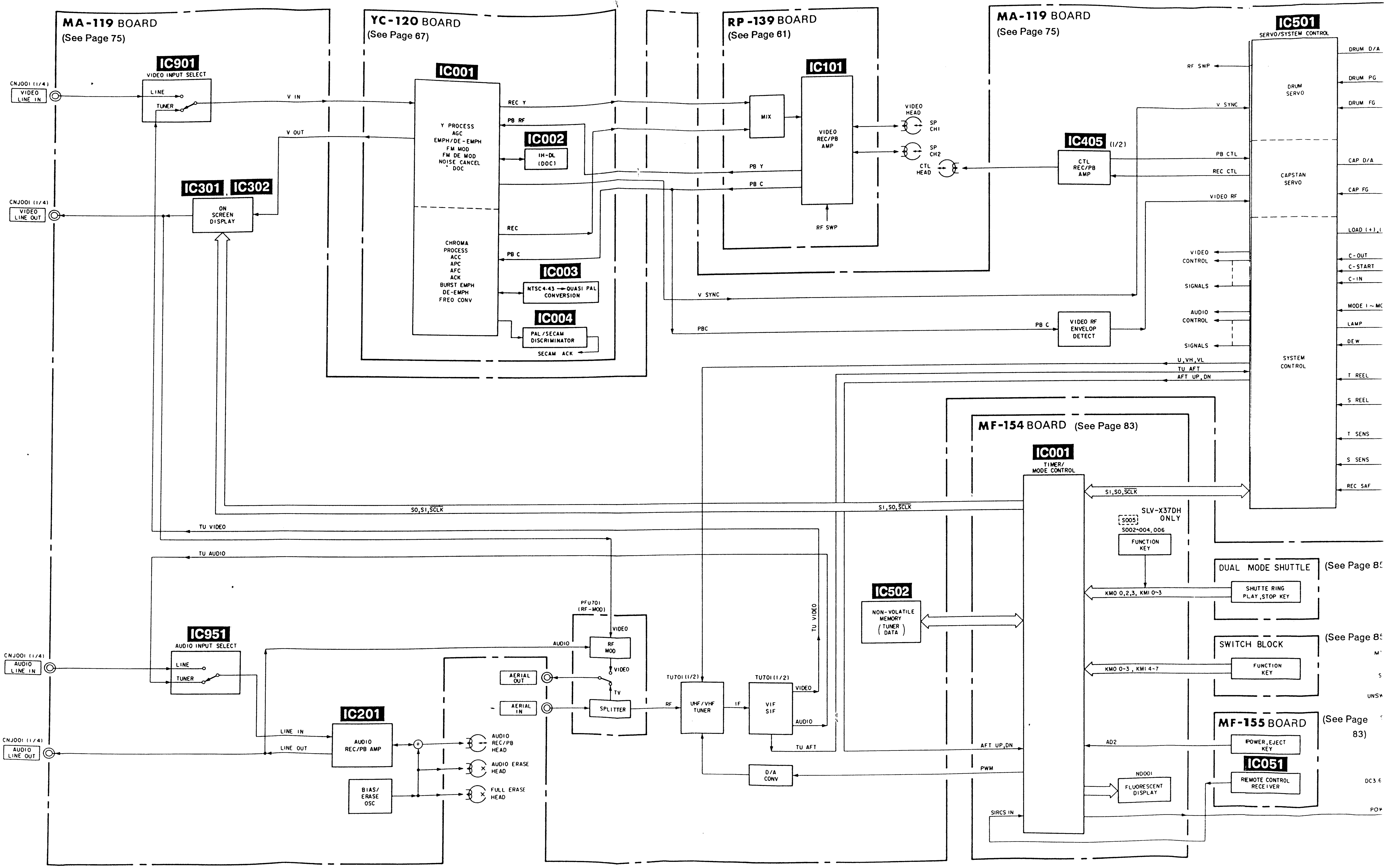

M902
Capstan motor (F2QKB38)
3-947-028-01
Drum motor
(E20EL)
3-947-043-01
M903
Loading motor assembly
3-946-917-01
FL belt
3-946-962-01
Loading belt
3-946-923-01
Mode switch
3-946-958-01
Drive belt
3-946-999-01

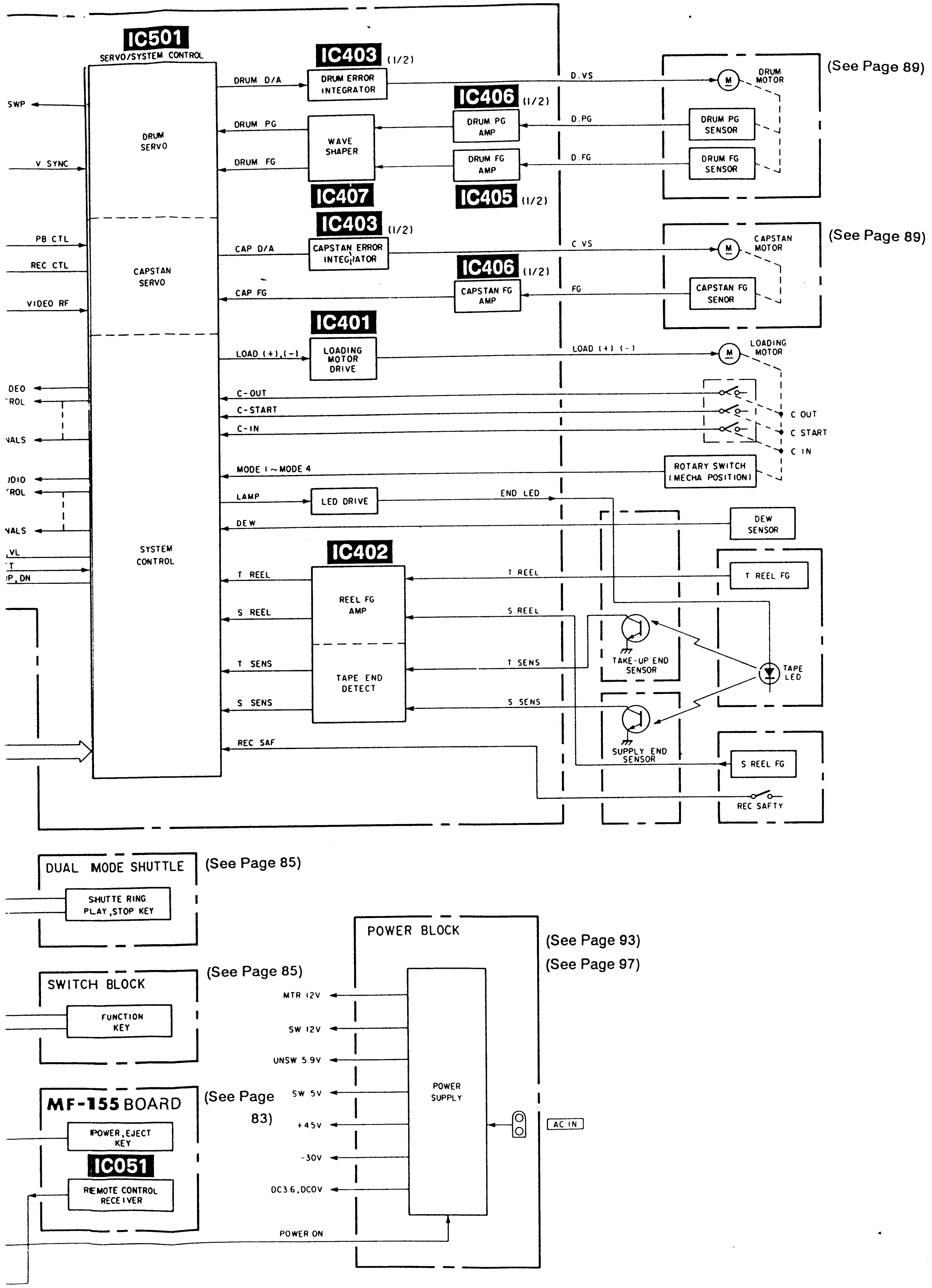
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

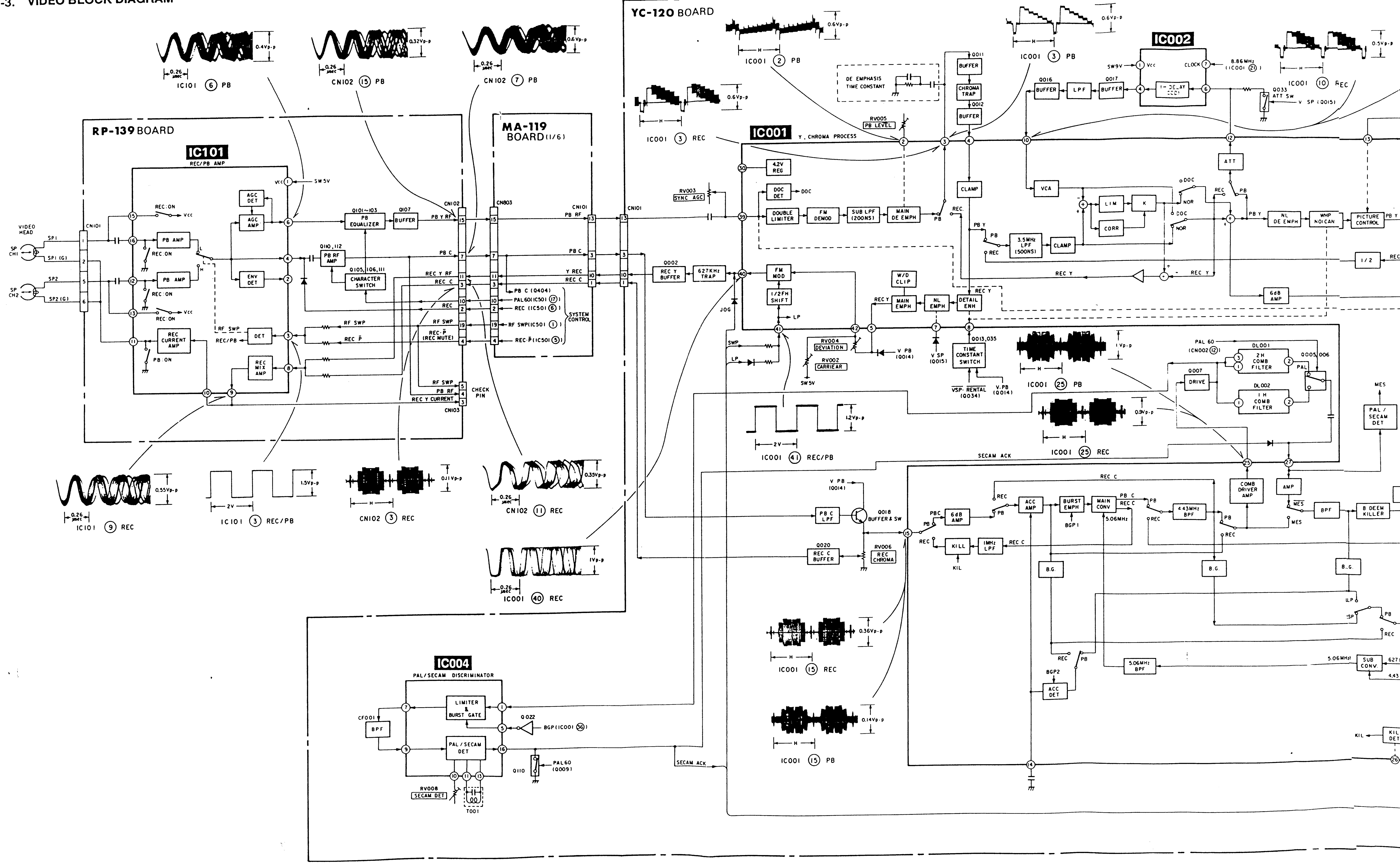

Drum Motor
VIDEO OUT Board
DM Board
Power Supply Board
RP-139
(REC/PB Amplifier)
MF-155
(Remove Control Receiver,
Eject/Power Switch)
FL Board
YC-120
(Y/CHROMA Process)
S SENSOR Board
ACE Head
Capstan Motor
BASE Board
RF Modulator
RFU-2018
(EXCEPT DH MODEL)
RFU-2019
(DH MODEL)
VIF Tuner
BTF-3G501 (EXCEPT DH MODEL)
BTF-3G502 (DH MODEL)
MF-154
(Timer/Mode Control)
MA-119
(Servo/System Control,
Audio, Tuner)

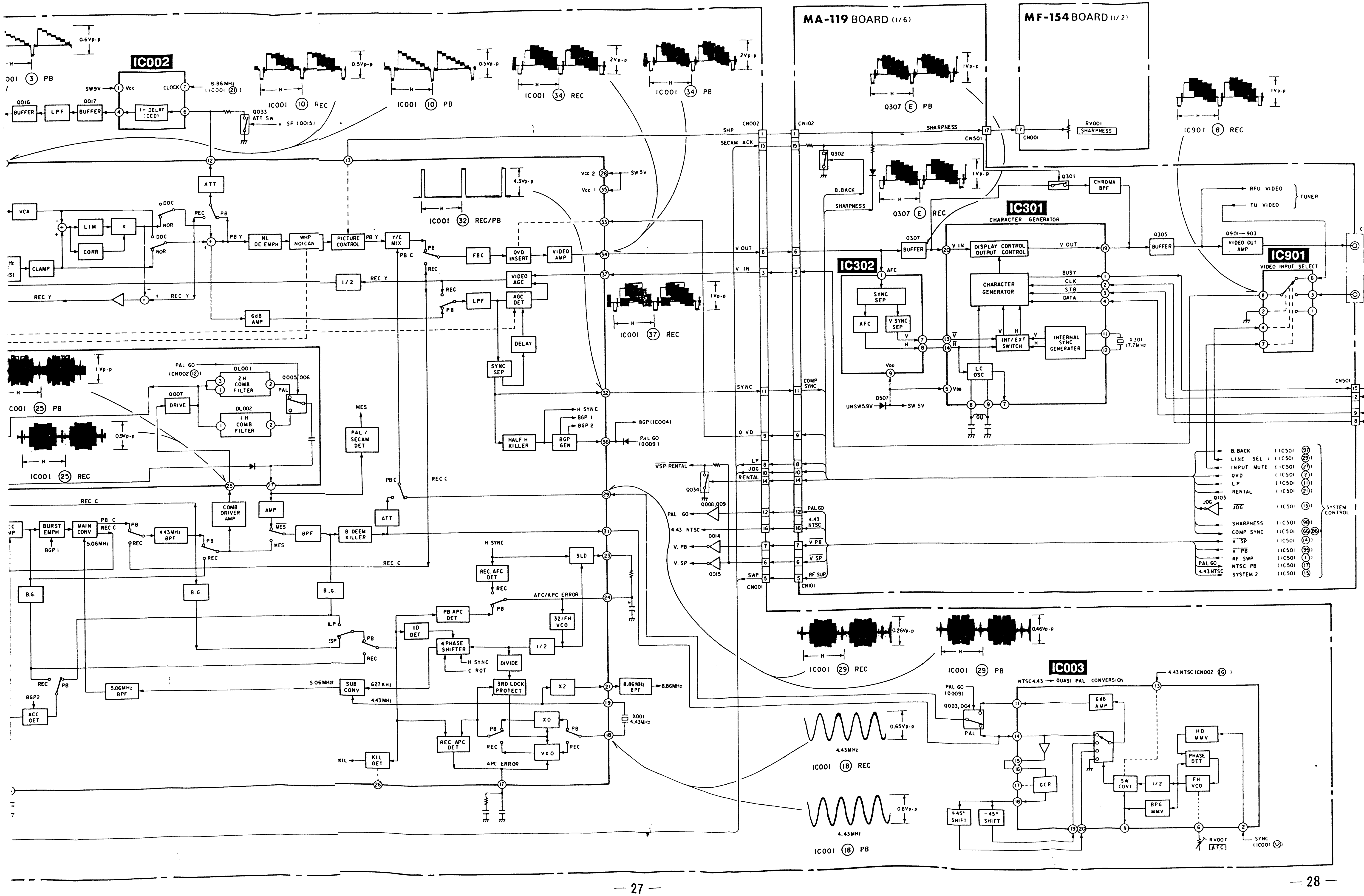
3-2. OVERALL BLOCK DIAGRAM


MA-119 BOARD
(See Page 75)
IC901
VIDEO INPUT SELECT
LINE
TUNER
CNJ001 (1/4)
VIDEO LINE IN
V IN
V OUT
IC301 IC302
ON SCREEN DISPLAY
CNJ001 (1/4)
VIDEO LINE OUT
YC-120 BOARD
(See Page 67)
IC001
Y PROCESS
AGC
EMPH/DE-EMPH
FM MOD
FM DE MOD
NOISE CANCEL
DOC
CHROMA PROCESS
ACC
APC
AFC
ACK
BURST EMPH
DE-EMPH
FREQ CONV
REC Y
PB RF
IC002
1H-DL (DOC)
REC
PB C
IC003
NTSC4.43 → QUASI PAL CONVERSION
IC004
PAL/SECAM DISCRIMINATOR
SECAM ACK
RP-139 BOARD
(See Page 61)
IC101
MIX
VIDEO REC/PB AMP
PB Y
PB C
RF SWP
VIDEO HEAD
SP CH1
SP CH2
CTL HEAD
V SYNC
PBC
MA-119 BOARD
(See Page 75)
IC405 (1/2)
CTL REC/PB AMP
PB CTL
REC CTL
VIDEO RF
PB C
VIDEO RF ENVELOP DETECT
IC501
SERVO/SYSTEM CONTROL
RF SWP
V SYNC
DRUM SERVO
CAPSTAN SERVO
SYSTEM CONTROL
VIDEO CONTROL SIGNALS
AUDIO CONTROL SIGNALS
U,VH,VL
TU AFT
AFT UP,DN
DRUM D/A
DRUM PG
DRUM FG
CAP D/A
CAP FG
LOAD (+),(
C-OUT
C-START
C-IN
MODE 1~MC
LAMP
DEW
T REEL
S REEL
T SENS
S SENS
REC SAF
MF-154 BOARD (See Page 83)
IC001
TIMER/MODE CONTROL
SI,SO,SCLK
SO,SI,SCLK
SI,SO,SCLK
SLV-X37DH ONLY
S005
S002~004, 006
FUNCTION KEY
KMO 0,2,3, KMI 0~3
DUAL MODE SHUTTLE
(See Page 85
SHUTTE RING PLAY,STOP KEY
SWITCH BLOCK
(See Page 85
FUNCTION KEY
KMO 0-3, KMI 4-7
MF-155 BOARD
(See Page 83)
POWER,EJECT KEY
IC051
REMOTE CONTROL RECEIVER
IC502
NON-VOLATILE MEMORY (TUNER DATA)
AD2
ND001
FLUORESCENT DISPLAY
SIRCS IN
PWM
AFT UP,DN
TU VIDEO
TU AUDIO
IC951
AUDIO INPUT SELECT
LINE
TUNER
CNJ001 (1/4)
AUDIO LINE IN
CNJ001 (1/4)
AUDIO LINE OUT
LINE IN
LINE OUT
IC201
AUDIO REC/PB AMP
BIAS/ERASE OSC
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
PFU701 (RF-MOD)
AUDIO
VIDEO
RF MOD
VIDEO
TV
AERIAL OUT
AERIAL IN
SPLITTER
RF
TU701 (1/2)
UHF/VHF TUNER
IF
TU701 (1/2)
VIF SIF
VIDEO
AUDIO
TU AFT
TU VIDEO
D/A CONV
DC3.6
POW
UNSW


IC501
SERVO/SYSTEM CONTROL
DRUM SERVO
CAPSTAN SERVO
SYSTEM CONTROL
SWP
V SYNC
PB CTL
REC CTL
VIDEO RF
DEO
ROL
NALS
DIO
ROL
NALS
VL
T
P, DN
DRUM D/A
DRUM PG
DRUM FG
IC403 (1/2)
DRUM ERROR INTEGRATOR
WAVE SHAPER
IC407
IC406 (1/2)
DRUM PG AMP
DRUM FG AMP
IC405 (1/2)
D.VS
D.PG
D.FG
DRUM MOTOR
DRUM PG SENSOR
DRUM FG SENSOR
(See Page 89)
CAP D/A
CAP FG
IC403 (1/2)
CAPSTAN ERROR INTEGRATOR
IC406 (1/2)
CAPSTAN FG AMP
C VS
FG
CAPSTAN MOTOR
CAPSTAN FG SENOR
(See Page 89)
IC401
LOAD (+),(-)
LOADING MOTOR DRIVE
LOAD (+) (-)
LOADING MOTOR
C-OUT
C-START
C-IN
C OUT
C START
C IN
MODE 1 ~ MODE 4
ROTARY SWITCH (MECHA POSITION)
LAMP
LED DRIVE
END LED
DEW
DEW SENSOR
IC402
T REEL
S REEL
T SENS
S SENS
REEL FG AMP
TAPE END DETECT
T REEL FG
TAKE-UP END SENSOR
TAPE LED
SUPPLY END SENSOR
S REEL FG
REC SAF
REC SAFTY
DUAL MODE SHUTTLE
SHUTTE RING PLAY,STOP KEY
(See Page 85)
SWITCH BLOCK
FUNCTION KEY
(See Page 85)
MF-155 BOARD
POWER,EJECT KEY
IC051
REMOTE CONTROL RECEIVER
(See Page 83)
POWER BLOCK
POWER SUPPLY
(See Page 93)
(See Page 97)
MTR 12V
SW 12V
UNSW 5.9V
SW 5V
+45V
-30V
DC3.6,0C0V
POWER ON
AC IN

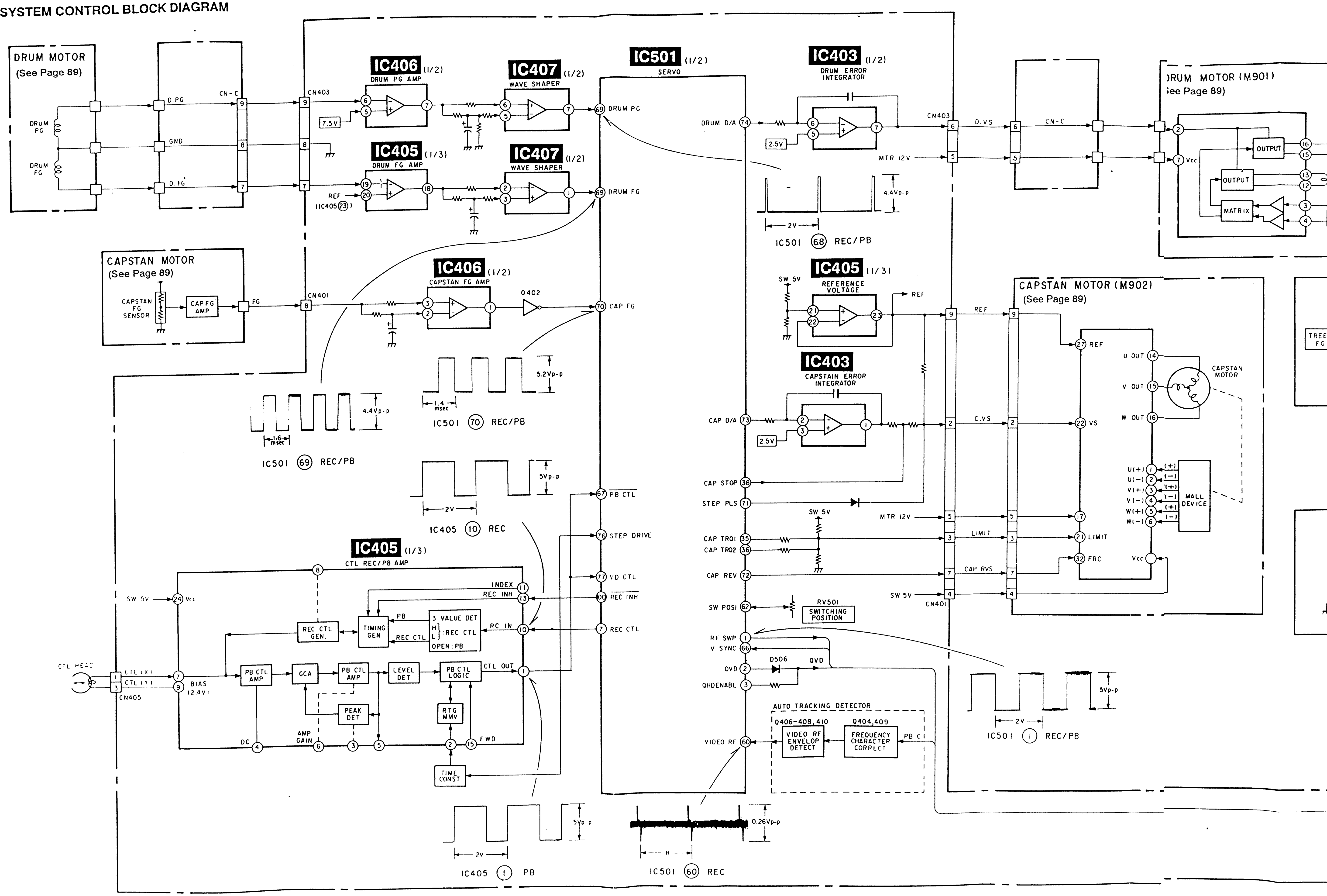
3-3. VIDEO BLOCK DIAGRAM

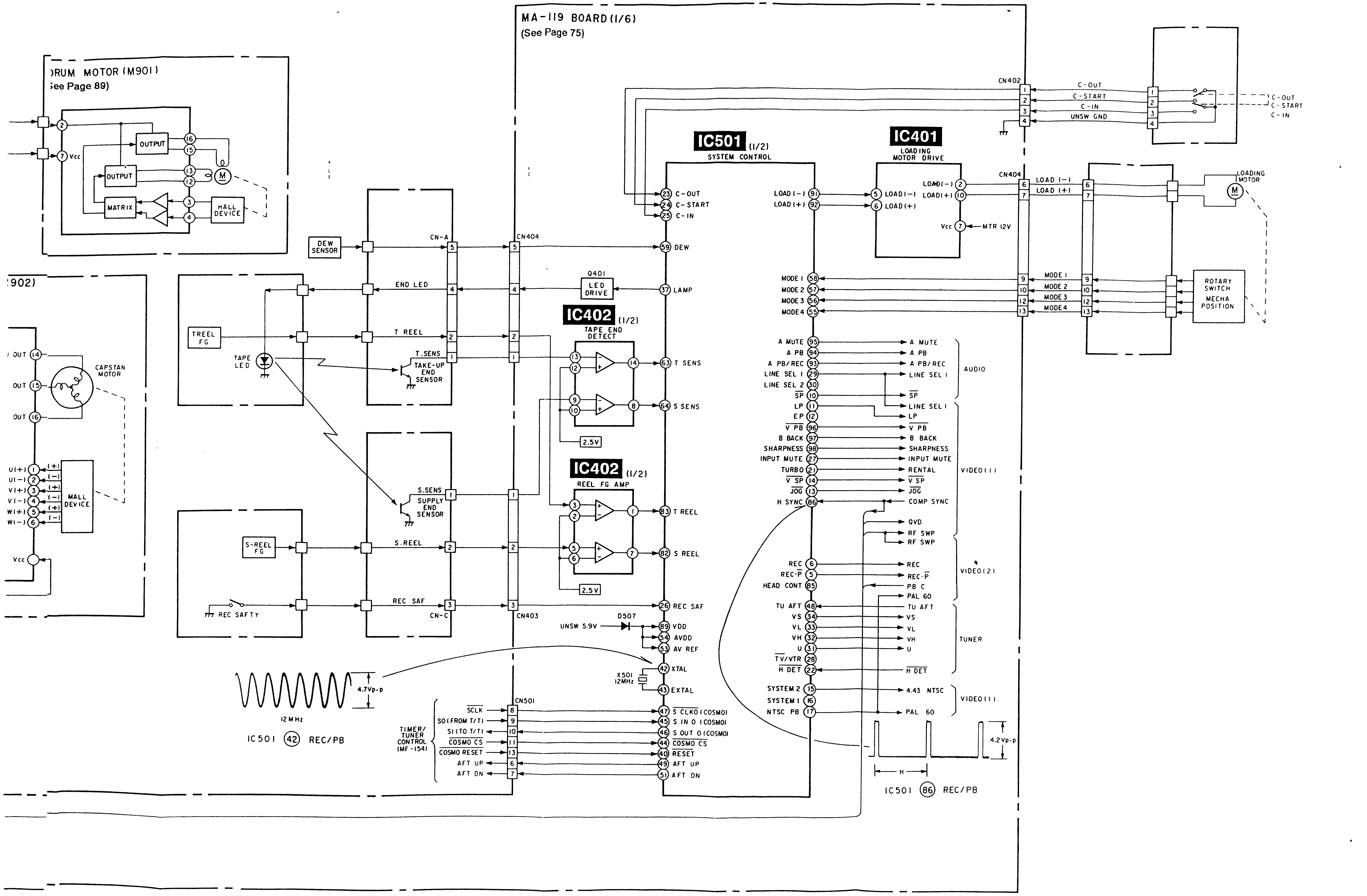

RP-139 BOARD
IC101
REC/PB AMP
VIDEO HEAD
SP CH1
SP CH2
SP1
SP1 (G)
SP2
SP2 (G)
CN101
REC : ON
PB AMP
AGC DET
AGC AMP
ENV DET
REC CURRENT AMP
REC MIX AMP
DET
RF SWP
REC/PB
PB : ON
SW 5V
Vcc
Q101~103
PB EQUALIZER
Q107
BUFFER
Q110, 112
PB RF AMP
Q105, 106, 111
CHARACTER SWITCH
PB Y RF
PB C
REC Y RF
REC C
REC
RF SWP
REC P̄
REC-P̄ (REC MUTE)
PB RF
REC Y CURRENT
CN102
CN103
CHECK PIN
MA-119 BOARD (1/6)
CN803
CN101
PB C (Q404)
PAL60 (IC501 ⑰)
REC (IC501 ⑥)
RF SWP (IC501 ①)
REC-P̄ (IC501 ⑤)
SYSTEM CONTROL
Y REC
IC101 ⑥ PB
0.4Vp-p
0.26 μsec
CN102 ⑮ PB
0.32Vp-p
CN102 ⑦ PB
0.6Vp-p
IC101 ⑨ REC
0.55Vp-p
IC101 ③ REC/PB
1.5Vp-p
2V
CN102 ③ REC
0.11Vp-p
H
CN102 ⑪ REC
0.35Vp-p
IC001 ⑩ REC
1Vp-p
YC-120 BOARD
IC001
Y, CHROMA PROCESS
IC001 ② PB
IC001 ③ PB
IC001 ③ REC
IC001 ⑩ REC
0.5Vp-p
DE EMPHASIS TIME CONSTANT
RV005 PB LEVEL
RV003 SYNC AGC
Q011
BUFFER
CHROMA TRAP
Q012
CLAMP
4.2V REG
DOC DET
DOC
DOUBLE LIMITER
FM DEMOD
SUB LPF (200NS)
MAIN DE EMPH
Q002
REC Y BUFFER
627KHz TRAP
FM MOD
1/2FH SHIFT
LP
JOG
W/D CLIP
MAIN EMPH
NL EMPH
DETAIL ENH
REC Y
RV004 DEVIATION
RV002 CARRIER
V PB (Q014)
V SP (Q015)
SW5V
SWP
Q013, 035
TIME CONSTANT SWITCH
VSP · RENTAL (Q034)
V-PB (Q014)
IC002
SW9V
CLOCK
8.86MHz (IC001 ㉑)
Q016
BUFFER
LPF
Q017
1H DELAY CCD
Q033
ATT SW
V SP (Q015)
ATT
VCA
LIM
K
CORR
NOR
DOC
PB Y
3.5MHz LPF (500NS)
NL DE EMPH
WHP NOI CAN
PICTURE CONTROL
6dB AMP
1/2
IC001 ㉕ PB
IC001 ㉕ REC
0.5Vp-p
IC001 ㊶ REC/PB
1.2Vp-p
PAL 60 (CN002 ⑫)
DL001
2H COMB FILTER
DL002
1H COMB FILTER
Q007
DRIVE
Q005, 006
PAL
SECAM ACK
MES
PAL/SECAM DET
COMB DRIVER AMP
AMP
BPF
B DEEM KILLER
V PB (Q014)
PB C LPF
Q018
BUFFER & SW
Q020
REC C BUFFER
RV006 REC CHROMA
6dB AMP
KILL
KIL
1MHz LPF
ACC AMP
BURST EMPH
BGP1
MAIN CONV
5.06MHz
4.43MHz BPF
B.G.
ACC DET
BGP2
5.06MHz BPF
SUB CONV
IC001 ⑮ REC
0.36Vp-p
IC001 ⑮ PB
0.14Vp-p
IC004
PAL/SECAM DISCRIMINATOR
LIMITER & BURST GATE
PAL/SECAM DET
CF001
BPF
Q022
BGP (IC001 ㊱)
Q110
PAL60 (Q009)
RV008 SECAM DET
T001
KIL DET



MA-119 BOARD (1/6)
MF-154 BOARD (1/2)
IC002
IC301
CHARACTER GENERATOR
IC302
IC901
VIDEO INPUT SELECT
IC003
NTSC4.43 → QUASI PAL CONVERSION
0.6Vp-p
IC001 ③ PB
0.5Vp-p
IC001 ⑩ REC
IC001 ⑩ PB
2Vp-p
IC001 ㉞ REC
IC001 ㉞ PB
1Vp-p
Q307 Ⓔ PB
Q307 Ⓔ REC
IC901 ⑧ REC
SW9V
Vcc
CLOCK
8.86MHz (IC001 ㉑)
1H DELAY CCD
Q016
Q017
BUFFER
LPF
Q033
ATT SW
V SP (Q015)
ATT
VCA
LIM
K
CORR
CLAMP
DOC
NOR
REC
PB
NL DE EMPH
WHP NOICAN
PICTURE CONTROL
Y/C MIX
PB Y
PB C
FBC
QVD INSERT
VIDEO AMP
VIDEO AGC
AGC DET
LPF
1/2
REC Y
6dB AMP
DELAY
SYNC SEP
4.3Vp-p
IC001 ㉜ REC/PB
Vcc 2 ㉘
Vcc 1 ㉟
SW 5V
IC001 ㊲ REC
IC001 ㉕ PB
IC001 ㉕ REC
0.9Vp-p
PAL 60
ICN002 ⑫
DL001
2H COMB FILTER
DL002
1H COMB FILTER
Q005, 006
Q007
DRIVE
PAL
MES
PAL / SECAM DET
HALF H KILLER
BGP GEN
H SYNC
BGP 1
BGP 2
BGP (IC004)
PAL 60 (Q009)
COMB DRIVER AMP
AMP
ATT
BPF
B DEEM KILLER
BURST EMPH
MAIN CONV
4.43MHz BPF
5.06MHz
BGP 1
B.G
REC C
PB C
H SYNC
REC. AFC DET
SLD
AFC/APC ERROR
PB APC DET
321FH VCO
ID DET
4 PHASE SHIFTER
C ROT
DIVIDE
1/2
3RD LOCK PROTECT
X 2
8.86MHz BPF
8.86MHz
SUB CONV.
627 KHz
5.06MHz BPF
4.43MHz
XO
VXO
REC APC DET
APC ERROR
X001 4.43MHz
KIL DET
KIL
ACC DET
BGP2
LP
SP
SHP
SECAM ACK
CN002
CN102
V OUT
V IN
SYNC
Q VD
LP
JOG
RENTAL
VSP RENTAL
Q034
Q008, 009
PAL 60
4.43 NTSC
Q014
V. PB
V. SP
Q015
SWP
CN001
CN101
COMP SYNC
V PB
V SP
RF SUP
SHARPNESS
CN501
RV001 SHARPNESS
CN001
Q302
B. BACK
Q301
CHROMA BPF
Q307
BUFFER
V IN
DISPLAY CONTROL OUTPUT CONTROL
CHARACTER GENERATOR
BUSY
CLK
STB
DATA
INT/EXT SWITCH
INTERNAL SYNC GENERATOR
LC OSC
X301 17.7MHz
AFC
SYNC SEP
V SYNC SEP
VDD
D507
UNSW5.9V
Q305
BUFFER
Q901~903
VIDEO OUT AMP
RFU VIDEO
TU VIDEO
TUNER
CNJ001
VIDEO LINE OUT
VIDEO LINE IN
CN501
BUSY
STROBE
SO (FROM T/T)
SCLK
B. BACK (IC501 ㊼)
LINE SEL (IC501 ㉙)
INPUT MUTE (IC501 ㉗)
QVD (IC501 ②)
LP (IC501 ⑪)
RENTAL (IC501 ㉑)
Q103
JOG (IC501 ⑬)
SHARPNESS (IC501 ㊽)
COMP SYNC (IC501 ⑥⑥)
V SP (IC501 ⑭)
V PB (IC501 ⑨)
RF SWP (IC501 ①)
NTSC PB (IC501 ⑰)
SYSTEM 2 (IC501 ⑮)
PAL 60
4.43NTSC
SYSTEM CONTROL
0.26Vp-p
IC001 ㉙ REC
0.46Vp-p
IC001 ㉙ PB
0.65Vp-p
4.43MHz
IC001 ⑱ REC
0.8Vp-p
IC001 ⑱ PB
4.43NTSC (CN002 ⑯)
PAL 60 (Q009)
Q003, 004
6dB AMP
GCR
+45° SHIFT
-45° SHIFT
SW CONT
1/2
HD MMV
PHASE DET
FH VCO
BPG MMV
RV007 AFC
SYNC (IC001 ㉜)

3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM


DRUM MOTOR
(See Page 89)
DRUM PG
DRUM FG
D.PG
GND
D.FG
CN-C
CN403
IC406 (1/2)
DRUM PG AMP
7.5V
IC405 (1/3)
DRUM FG AMP
REF
(IC405 23)
IC407 (1/2)
WAVE SHAPER
IC501 (1/2)
SERVO
DRUM PG
DRUM FG
CAPSTAN MOTOR
(See Page 89)
CAPSTAN FG SENSOR
CAP FG AMP
FG
CN401
IC406 (1/2)
CAPSTAN FG AMP
Q402
CAP FG
4.4Vp-p
1.6 msec
IC501 69 REC/PB
5.2Vp-p
1.4 msec
IC501 70 REC/PB
5Vp-p
2V
IC405 10 REC
FB CTL
STEP DRIVE
VD CTL
REC INH
REC CTL
IC405 (1/3)
CTL REC/PB AMP
SW 5V
Vcc
INDEX
REC INH
PB
REC CTL GEN.
TIMING GEN
3 VALUE DET
H
L
:REC CTL
OPEN:PB
REC CTL
RC IN
CTL HEAD
CTL (X)
CTL (Y)
CN405
BIAS (2.4V)
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
CTL OUT
PEAK DET
RTG MMV
DC
AMP GAIN
FWD
TIME CONST
5Vp-p
2V
IC405 1 PB
0.26Vp-p
H
IC501 60 REC
IC403 (1/2)
DRUM ERROR INTEGRATOR
DRUM D/A
2.5V
MTR 12V
D.VS
CN-C
4.4Vp-p
2V
IC501 68 REC/PB
DRUM MOTOR (M901)
See Page 89)
Vcc
OUTPUT
OUTPUT
MATRIX
IC405 (1/3)
REFERENCE VOLTAGE
SW 5V
REF
IC403
CAPSTAIN ERROR INTEGRATOR
CAP D/A
2.5V
CAP STOP
STEP PLS
CAP TRQ1
CAP TRQ2
CAP REV
SW POSI
RV501
SWITCHING POSITION
RF SWP
V SYNC
QVD
QHDENABL
D506
QVD
SW 5V
MTR 12V
SW 5V
CN401
REF
C.VS
LIMIT
CAP RVS
CAPSTAN MOTOR (M902)
(See Page 89)
REF
VS
LIMIT
FRC
U OUT
V OUT
W OUT
CAPSTAN MOTOR
U(+)
U(-)
V(+)
V(-)
W(+)
W(-)
HALL DEVICE
Vcc
AUTO TRACKING DETECTOR
Q406-408, 410
Q404, 409
VIDEO RF ENVELOP DETECT
FREQUENCY CHARACTER CORRECT
PB C
VIDEO RF
5Vp-p
2V
IC501 1 REC/PB
TREE FG


MA-119 BOARD (1/6)
(See Page 75)
)RUM MOTOR (M901)
;ee Page 89)
OUTPUT
OUTPUT
MATRIX
HALL DEVICE
M
Vcc
:902)
OUT
OUT
OUT
CAPSTAN MOTOR
U(+)
U(-)
V(+)
V(-)
W(+)
W(-)
HALL DEVICE
Vcc
DEW SENSOR
CN-A
CN404
END LED
TREEL FG
T REEL
TAPE LED
T.SENS
TAKE-UP END SENSOR
S.SENS
SUPPLY END SENSOR
S-REEL FG
S.REEL
REC SAFTY
REC SAF
CN-C
CN403
Q401
LED DRIVE
IC402 (1/2)
TAPE END DETECT
IC402 (1/2)
REEL FG AMP
2.5V
2.5V
IC501 (1/2)
SYSTEM CONTROL
C-OUT
C-START
C-IN
DEW
LAMP
T SENS
S SENS
T REEL
S REEL
REC SAF
UNSW 5.9V
D507
VDD
AVDD
AV REF
XTAL
EXTAL
X501 12MHz
4.7Vp-p
12MHz
IC501 (42) REC/PB
CN501
TIMER/TUNER CONTROL (MF-154)
SCLK
SO (FROM T/T)
SI (TO T/T)
COSMO CS
COSMO RESET
AFT UP
AFT DN
S CLKO (COSMO)
S IN O (COSMO)
S OUT O (COSMO)
COSMO CS
RESET
AFT UP
AFT DN
LOAD (-)
LOAD (+)
MODE 1
MODE 2
MODE 3
MODE 4
A MUTE
A PB
A PB/REC
LINE SEL 1
LINE SEL 2
SP
LP
EP
V PB
B BACK
SHARPNESS
INPUT MUTE
TURBO
V SP
JOG
H SYNC
REC
REC·P
HEAD CONT
TU AFT
VS
VL
VH
U
TV/VTR
H DET
SYSTEM 2
SYSTEM 1
NTSC PB
A MUTE
A PB
A PB/REC
LINE SEL 1
SP
LINE SEL 1
LP
V PB
B BACK
SHARPNESS
INPUT MUTE
RENTAL
V SP
JOG
COMP SYNC
QVD
RF SWP
RF SWP
REC
REC·P
PB C
PAL 60
TU AFT
VS
VL
VH
U
H DET
4.43 NTSC
PAL 60
AUDIO
VIDEO(1)
VIDEO(2)
TUNER
VIDEO(1)
4.2Vp-p
H
IC501 (86) REC/PB
IC401
LOADING MOTOR DRIVE
LOAD (-)
LOAD (+)
LOAD (-)
LOAD (+)
Vcc
MTR 12V
CN402
C-OUT
C-START
C-IN
UNSW GND
C-OUT
C-START
C-IN
CN404
LOAD (-)
LOAD (+)
LOADING MOTOR
MODE 1
MODE 2
MODE 3
MODE 4
ROTARY SWITCH
MECHA POSITION

3-5. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-119 BOARD IC501)

Signal	Pin. No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOAD-ING	TAPE THREAD-ING	TAPE UN-THREAD-ING	STOP	FF	REW	PB	PB-PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC-PAUSE
LOAD (–)	MA-119 Board IC501 (91)	O	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L
LOAD (+)	MA-119 Board IC501 (92)	O	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L
MODE 1	MA-119 Board IC501 (58)	I	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H
MODE 2	MA-119 Board IC501 (57)	I	L	H	L	L	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-119 Board IC501 (56)	I	H	H	H	L	H	H	H	H	L	L	L	L	L	L	L	L
MODE 4	MA-119 Board IC501 (54)	I	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
C-OUT	MA-119 Board IC501 ㉓	I	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
C-START	MA-119 Board IC501 ㉔	I	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H
C-IN	MA-119 Board IC501 ㉕	I	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
REC SAF	MA-119 Board IC501 ㉖	I	L	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
T REEL	MA-119 Board IC501 (83)	I	H/L	H/L	H/L	H/L	H/L	H/L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
S REEL	MA-119 Board IC501 (82)	I	H/L	H/L	H/L	*2	*2	H/L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
LAMP	MA-119 Board IC501 ㊲	O	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
CAP TRQ1	MA-119 Board IC501 ㉟	O	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP TRQ2	MA-119 Board IC501 ㊱	O	H	H	H	H	H	H	H	H	H	H	*4	H	H	H	H	H
CAP STOP	MA-119 Board IC501 ㊳	O	L	*5	*5	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
T SENS	MA-119 Board IC501 (63)	I	*3	*3	*3	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	MA-119 Board IC501 (64)	I	*3	*3	*3	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

*1. "L" when erasing protection tab is bent. "H" when not bent.
*2. Pulse of period in proportion to reel rotating speed.
*3. Approx. 2 msec period "H" pulse.
*4. Pulse.
*5. 3 value output of "H", "L" and "HIZ (2.5V)".
*6. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

3-6. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-119 BOARD IC501)

Signal	Pin. No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UN-THREAD-ING	PB	PB-PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC-PAUSE
REC CTL	MA-119 Board IC501 ⑦	O	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*1	*14
STEP PLS	MA-119 Board IC501 (71)	O	L	*2	*2	*2	*2	*2	L	*3	*2	*2	*2	*2	L
SW POSITION *4	MA-119 Board IC501 (62)	I													
$\overline{\text{PB CTL}}$	MA-119 Board IC501 (67)	I	H	*5	*5			*1	H/L	*3	*5	*5	*5	*1	H
VD CTL	MA-119 Board IC501 (77)	I	H	*5	*5			*1	H/L	*3	*5	*5	*5	*1	H
DRUM PG	MA-119 Board IC501 (68)	I	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
DRUM FG	MA-119 Board IC501 (69)	I	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
CAP FG	MA-119 Board IC501 (70)	I	H/L	*8	*8	*9	*9	*8	H/L	*10	*8	*8	*8	*8	H/L
CAP RVS	MA-119 Board IC501 (72)	O	H/L	L	H	L	H	L	L	*3	L	L	H	L	L
CAP DA *14	MA-119 Board IC501 (73)	O	*11	*11	*11	*11	*11	*12	*11	*11	*12	*12	*12	*12	*11
DRUM DA *14	MA-119 Board IC501 (74)	O	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13
STEP DRIVE	MA-119 Board IC501 (76)	O	L	L	L	L	L	L	L	*15	L	L	L	L	L

*1. PLL/SECAM: 25 Hz pulse. NTSC: 30 Hz pulse.
*2. 3 value output of "H", "L" and Hi-Z (2.5V).
*3. Unstable period Pulse.
*4. Input terminal for video switching position adjustment.
*5. Pulse of period in proportion to tape speed.
*6. PLL/SECAM: 25 Hz "H" pulse. NTSC: 30 Hz "H" pulse.
*7. PLL/SECAM: 600 Hz pulse. NTSC: 720 Hz pulse.
*8. Pulse of period in proportion to tape speed.
*9. Unstable period pulse.
*10. Pulse at tape running.
*11. Approx. 2 msec period "H" or "L" pulse.
*12. Approx. 1.5 msec period "H" or "L" pulse.
*13. Approx. 3 msec period "H" or "L" pulse.
*14. HI-Z (2.5V).
*15. "H" when FWD direction and STEP drive.

3-7. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-119 BOARD IC501)

Signal	Pin. No.	I/O	I/O level
COSMO•RESET	MA-119 Board IC501 ㊵	I	Normally "H". "L" when service interruption is detected or restored.
COSMO•CS	MA-119 Board IC501 ㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
SI•BUS	MA-119 Board IC501 ㊺	I	Serial communication data to timer microprocessor. V period "L" pulse.
SO•BUS	MA-119 Board IC501 ㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
S CLK	MA-119 Board IC501 ㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

3-8. SYSTEM CONTROL AND RF MODULATOR — INPUT SELECTION BLOCK INTERFACE (MA-119 BOARD IC501)

Signal	Pin. No.	I/O	I/O level
TV/VTR	MA-119 Board IC501 ㉘	O	"L" when RF modulator through.
LINE	MA-119 Board IC501 ㉙	O	Input select control signal.

501)

3-9. SYSTEM CONTROL — VIDEO BLOCK INTERFACE (MA-119 BOARD IC501)

Signal	Pin. No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UN-LOAD-ING	PB	PB· PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC· PAUSE
V-PB	MA-119 Board IC501 (96)	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-119 Board IC501 (85)	O	L	L	L	L	H	*1	H	L	L	H	L
RF SW P.	MA-119 Board IC501 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD	MA-119 Board IC501 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
SP	MA-119 Board IC501 ⑩	O	L	L	L	*6	*6	*6	*6	*6	*6	L	L
LP	MA-119 Board IC501 ⑪	O	L	L	L	*6	*6	*6	*6	*6	*6	L	L
EP	MA-119 Board IC501 ⑫	O	L	L	L	*6	*6	*6	*6	*6	*6	L	L
REC. P	MA-119 Board IC501 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-119 Board IC501 ⑥	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-119 Board IC501 (66)	I	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
BLUE BACK	MA-119 Board IC501 (97)	O	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8

*1. "H" when tape stops. "L" when tape runs (approx. for 40 msec).

*2. Synchronized with drum rotation. 25 Hz 50% duty pulse.

*3. Normally "L". "H" when video signal is not generated.

*4. V period "H" pulse.

*6. Selected by tape recording mode.

sig/mod	SP	LP	EP
SP (10)	L	H	H
LP (11)	L	H	L
EP (12)	L	L	H

*7. Composite sync signal (positive).

*8. "H" when menu screen or blue back screen.

3-10. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-119 BOARD IC501)

Signal	Pin. No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UN-LOAD-ING	PB	PB· PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC· PAUSE
A PB	MA-119 Board IC501 (94)	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-119 Board IC501 (95)	O	L	L	L	L	H	H	H	H	H	L	L
A PB/REC	MA-119 Board IC501 (93)	O	L	L	L	L	L	L	L	L	L	H	L
$\overline{SP}$	MA-119 Board IC501 ⑩	O	L	L	L	*2	*2	*2	*2	*2	*2	L	L

*2. Selected by tape recording mode. SP mode: "L", LP mode: "H".

3-11.

Pin. No.
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D IC501)

SLOW	× 2	CUE	REVIEW	REC	REC· PAUSE
H	H	H	H	L	L
H	H	H	H	L	L
L	L	L	L	H	L
*2	*2	*2	*2	L	L

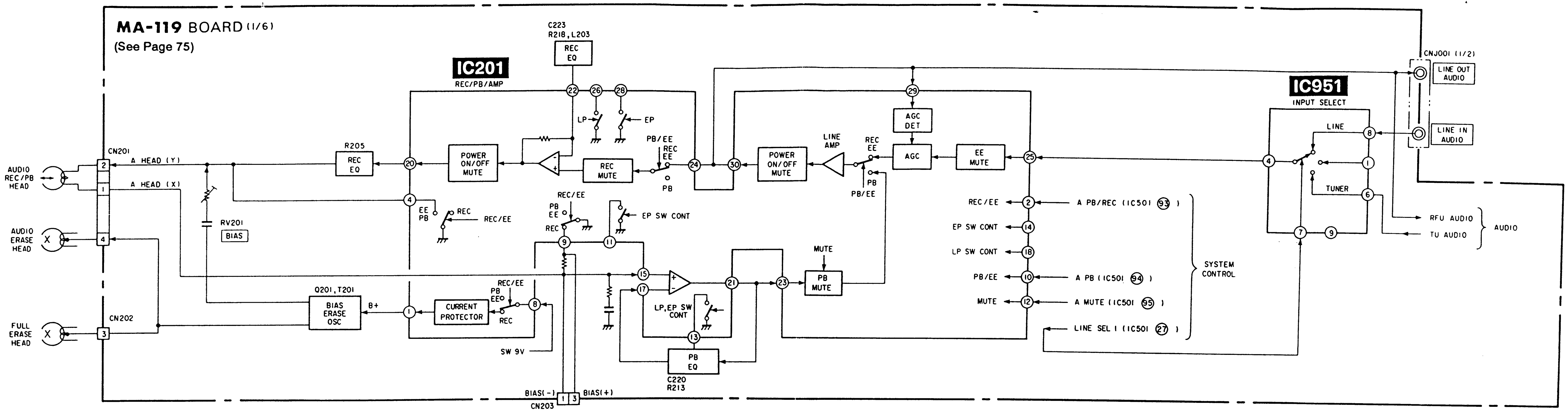
3-11. SERVO/SYSTEM CONTROL — MICROPROCESSOR TERMINAL FUNCTION (MA-119 BOARD IC501)

Pin. No.	Port	I/O	Name	Function
1	PB5/PPO13	O	RF SWP	Video switching pulse output.
2	PB4/PPO12	O	Q VD	Quasi VD pulse output.
3	PB3/PPO11	O	Q HD ENABLE	Quasi HD control.
4	PB2	O	AMS	AMS control output.
5	PB1	O	REC P	"H" output when video REC (REC control).
6	PB0	O	REC	"H" output when REC.
7	PC7	O	REC CTL	REC CTL output.
8	PC6	O	INT VD	Not used.
9	PC5	O	PB	"H" when normal audio playback.
10	PC4	O	$\overline{\text{SP}}$	"L" when SP mode.
11	PC3	O	LP	"H" when LP mode.
12	PC2	O	EP	"H" when EP mode.
13	PC1	O	$\overline{\text{JOG}}$	"L" when special playback.
14	PC0	O	$\overline{\text{V SP}}$	SP mode for video system.
15	PJ7	O	SYSTEM 2	Vidoe system select signal. "H" when NTSC 4.43 play back.
16	PJ6	O	SYSTEM 1	Vidoe system select signal. Not used.
17	PJ5	O	NTSC (SEC) PB	"H" when NTSC (SECAM) playback.
18	PJ4	I	PAL M JUDGE	"H" when video system is PAL-M mode.
19	PJ3	O	PAL M HOLD	"L" when special playback on NTSC, "L" when special playback on PAL-M.
20	PJ2	O	C ROT STOP	"H" when stop.
21	PJ1	O	TURBO	"H" when RENTAL PICTURE.
22	PJ0	I	$\overline{\text{H DET}}$	H sync detection input.
23	PD7	I	C-OUT	Cassette switch input.
24	PD6	I	C-START	
25	PD5	I	C-IN	
26	PD4	I	REC SAF	Erasing protection tab detection.
27	PD3	O	INPUT MUTE	Line input (video system) muting.
28	PD2	O	$\overline{\text{TV}}$/VTR	Antenna output select signal. "H": VTR, "L": TV.
29	PD1	O	LINE SEL 1	"H" when LINE 1.
30	PD0	O	LINE SEL 2	Not used.
31	PH7	O	U	Tuner band select signal.
32	PH6	O	VH	
33	PH5	O	VL	
34	PH4	O	VS	
35	PH3	O	CAP TRQ 1	Current drive capstan motor control.
36	PH2	O	CAP TRQ 2	
37	PH1	O	LAMP	End sensor lamp drive output.
38	PH0	O	CAP STOP	Capstan STOP signal output.
39	MP	I	MP	Fixed "L" level.
40	$\overline{\text{RST}}$	I	$\overline{\text{COSMO RST}}$	System reset input.
41	Vss		Vss	GND
42	XTAL	O	XTAL	System clock 12 MHz.
43	EXTAL	I	EXTAL	
44	$\overline{\text{CS0}}$	O	$\overline{\text{COSMO CS}}$	Chip select signal.
45	SI0	I	S IN 0	Signal for serial communication.

1)

Pin. No.	Port	I/O	Name	Function
46	SO0	O	S OUT 0	Signal for serial communication.
47	SCK0	O	SCLK 0	Clock for serial communication.
48	PF7/AN11	I	TU AFT	Tuner analog AFT input.
49	PF6/AN10	O	AFT UP	AFT UP.
50	PF5/AN9	I	DEST	Destination selection.
51	PF4/AN8	O	AFT DOWN	AFT down.
52	AVss		AVss	UNSW GND.
53	AVREF		AVREF	AD port reference input. UNSW 5V.
54	AVDD		AVDD	UNSW 5V.
55	PF3/AF7	I	MODE4	Mechanism section CAM encoder input.
56	PF2/AN6	I	MODE3	
57	PF1/AN5	I	MODE2	
58	PF0/AN4	I	MODE1	
59	AN3	I	DEW	DEW sensor analog input.
60	AN2	I	VIDEO RF	Video RF envelope input.
61	AN1	I	N.C.	Not used.
62	AN0	I	SW POSI	VR input for RF SWP adjustment.
63	PG7	I	T SENSOR	Take-up side end sensor input.
64	PG6	I	S SENSOR	Supply side end sensor input.
65	PG5	I	N.C.	Not used.
66	PG4/SYNC	I	V SYNC	Composite sync input.
67	PG3/PBCTL	I	PB CTL	Playback CTL input
68	PG2/DPG	I	DRM PG	Drum PG input.
69	PG1/DFG	I	DRM FG	Drum FG input.
70	PG0/CFG	I	CAP FG	Capstan FG input.
71	PE7	O	STEP PULS	"L" when capstan STEP is driven.
72	PE6	O	CAP RVS	Capstan reverse signal output.
73	PE5	O	CAP DA	Capstan error D/A output.
74	PE4	O	DRUM DA	Drum error D/A output.
75	PE3	O	MEM CS	EEPROM chip select.
76	PE2	O	STEP DRIVE	CTL amp step action control.
77	PE1	I	VD CTL	Playback CTL input.
78	PE0		N.C.	Not used.
79	SI1	I	S IN 1	
80	SO1	O	S OUT 1	
81	SCK1		SCK 1	
82	PI4	I	S REEL	S reel sensor input.
83	PI3	I	T REEL	T reel sensor input.
84	PI2/PWM	O	BUZZER	Not used.
85	PI1/RMC	O	HEAD CONT	Head amp IC control.
86	TEX	I	H SYNC	H sync input.
87	TX		N.C.	Not used.
88	Vss		Vss	GND
89	VDD		VDD	UNSW 5V.
90	N.C.		N.C.	Not used.
91	PA7	O	LOAD (–)	Loading motor control.
92	PA6	O	LOAD (+)	
93	PA5	O	A PB/REC	Normal audio bias oscillation ON/OFF.
94	PA4	O	A PB	"H" when audio playback.
95	PA3	O	A MUTE	Audio muting output. "H": muting.
96	PA2	O	V-PB	"L" when video playback.
97	PA1	O	BLUE BACK	Compulsion blue back. "H": blue back.
98	PA0	O	SHARPNESS	Sharpness control (for TURBO PICTURE).
99	PB7	O	HEAD SEL	Video head select signal.
100	PB6/PPO14	O	REC INH	CTL amp REC inhibit.

3-12. AUDIO BLOCK DIAGRAM


MA-119 BOARD (1/6)
(See Page 75)
IC201
REC/PB/AMP
C223
R218, L203
REC EQ
22
26
28
LP
EP
PB/EE
REC
EE
PB
REC MUTE
POWER ON/OFF MUTE
R205
REC EQ
20
4
24
30
EE
PB
REC
REC/EE
CN201
A HEAD (Y)
A HEAD (X)
AUDIO REC/PB HEAD
2
1
4
AUDIO ERASE HEAD
RV201
BIAS
FULL ERASE HEAD
3
CN202
Q201, T201
BIAS ERASE OSC
B+
1
CURRENT PROTECTOR
REC/EE
PB
EE
REC
8
SW 9V
REC/EE
PB
EE
REC
9
11
EP SW CONT
15
17
21
23
LP, EP SW CONT
13
PB EQ
C220
R213
BIAS(-)
BIAS(+)
1
3
CN203
POWER ON/OFF MUTE
LINE AMP
REC
EE
PB
PB/EE
29
AGC DET
AGC
EE MUTE
25
MUTE
PB MUTE
REC/EE
EP SW CONT
LP SW CONT
PB/EE
MUTE
2
14
18
10
12
A PB/REC (IC501 93)
A PB (IC501 94)
A MUTE (IC501 95)
LINE SEL 1 (IC501 27)
SYSTEM CONTROL
IC951
INPUT SELECT
LINE
TUNER
4
8
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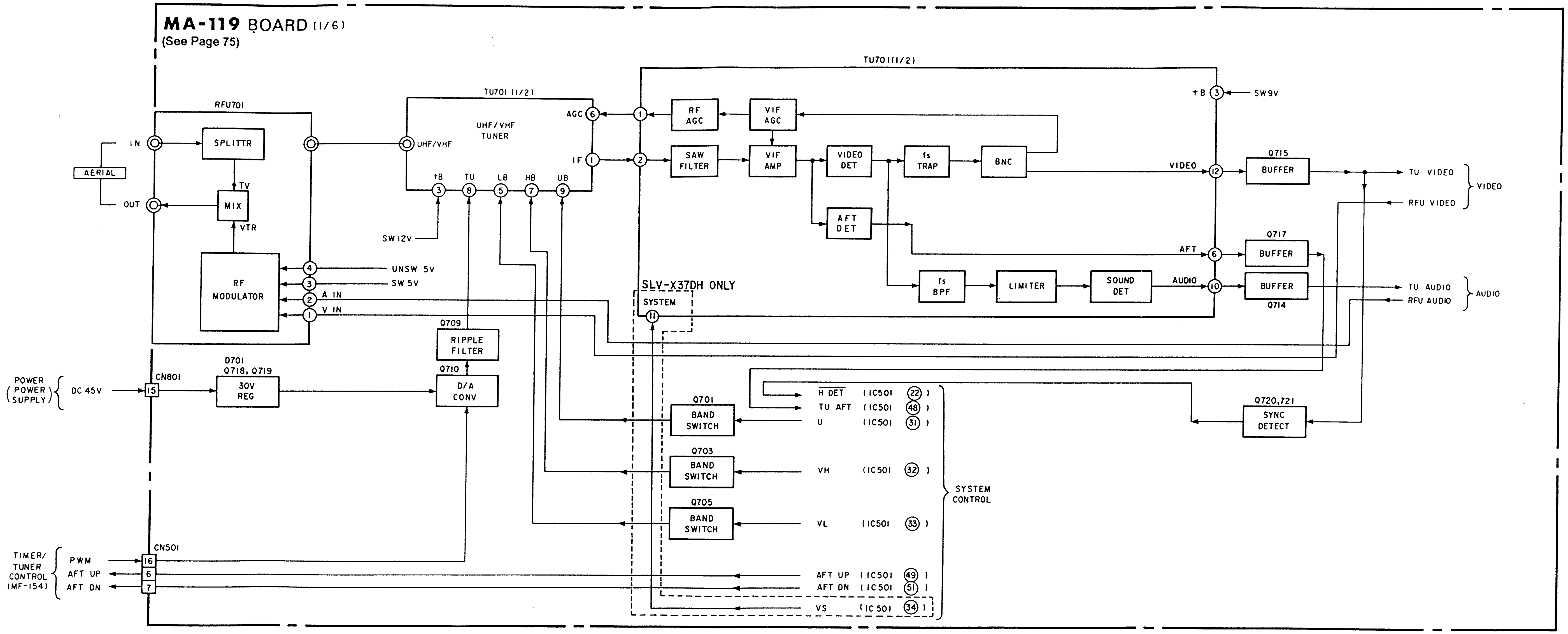
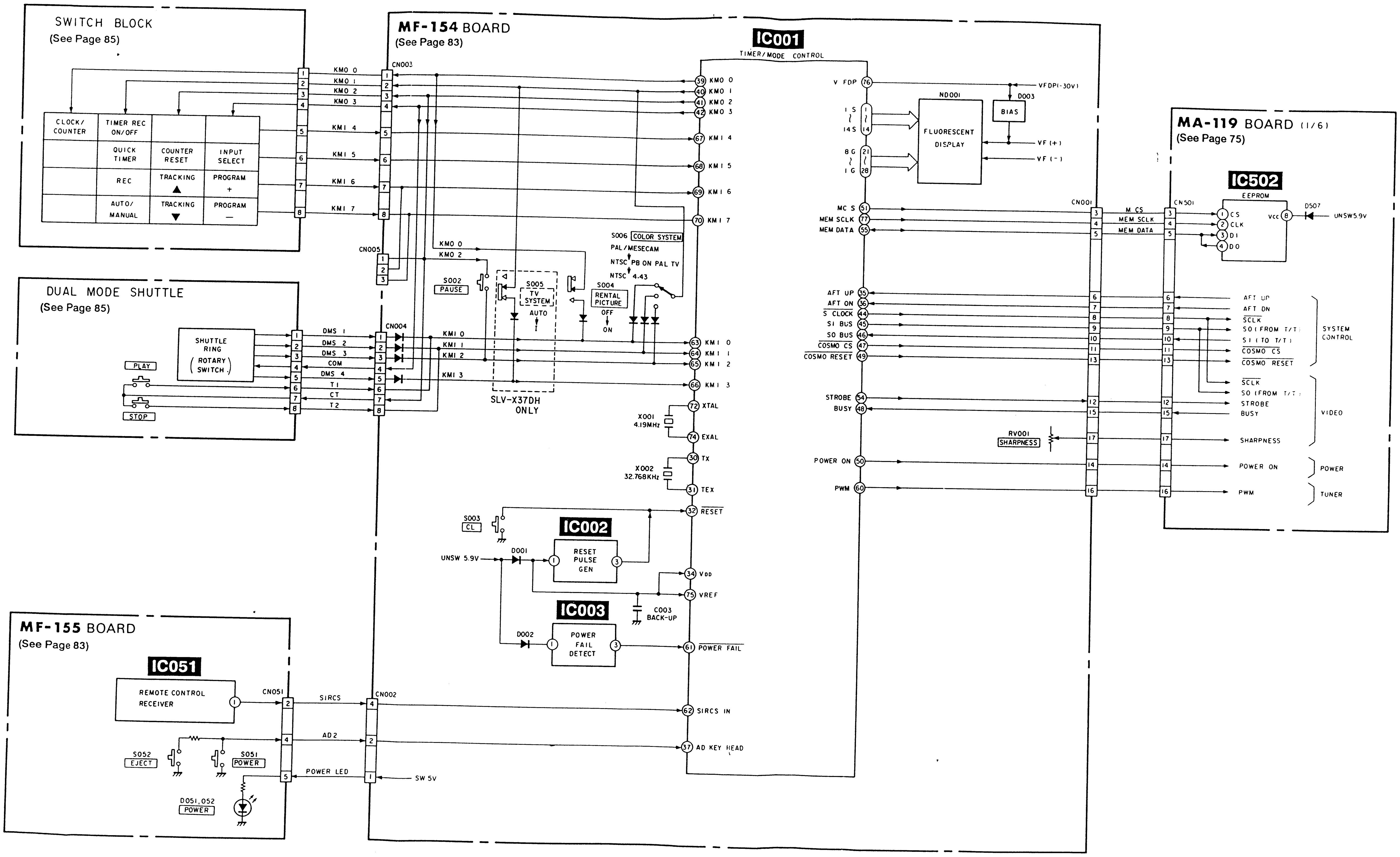
9
CNJ001 (1/2)
LINE OUT AUDIO
LINE IN AUDIO
RFU AUDIO
TU AUDIO
AUDIO

3-13. TUNER BLOCK DIAGRAM


MA-119 BOARD (1/6)
(See Page 75)
RFU701
AERIAL
IN
OUT
SPLITTR
TV
MIX
VTR
RF MODULATOR
UNSW 5V
SW 5V
A IN
V IN
SW 12V
TU701 (1/2)
UHF/VHF TUNER
UHF/VHF
AGC
IF
+B
TU
LB
HB
UB
Q709
RIPPLE FILTER
Q710
D/A CONV
POWER (POWER SUPPLY)
DC 45V
CN801
D701
Q718, Q719
30V REG
TIMER/ TUNER CONTROL (MF-154)
PWM
AFT UP
AFT DN
CN501
TU701(1/2)
RF AGC
VIF AGC
SAW FILTER
VIF AMP
VIDEO DET
fs TRAP
BNC
AFT DET
fs BPF
LIMITER
SOUND DET
+B
SW9V
VIDEO
AFT
AUDIO
Q715
BUFFER
Q717
BUFFER
BUFFER
Q714
TU VIDEO
RFU VIDEO
VIDEO
TU AUDIO
RFU AUDIO
AUDIO
SLV-X37DH ONLY
SYSTEM
Q720,721
SYNC DETECT
Q701
BAND SWITCH
Q703
BAND SWITCH
Q705
BAND SWITCH
H DET (IC501 ㉒)
TU AFT (IC501 (48))
U (IC501 ㉛)
VH (IC501 ㉜)
VL (IC501 ㉝)
AFT UP (IC501 (49))
AFT DN (IC501 (51))
VS (IC501 ㉞)
SYSTEM CONTROL

3-14. TIMER/MODE CONTROL BLOCK DIAGRAM

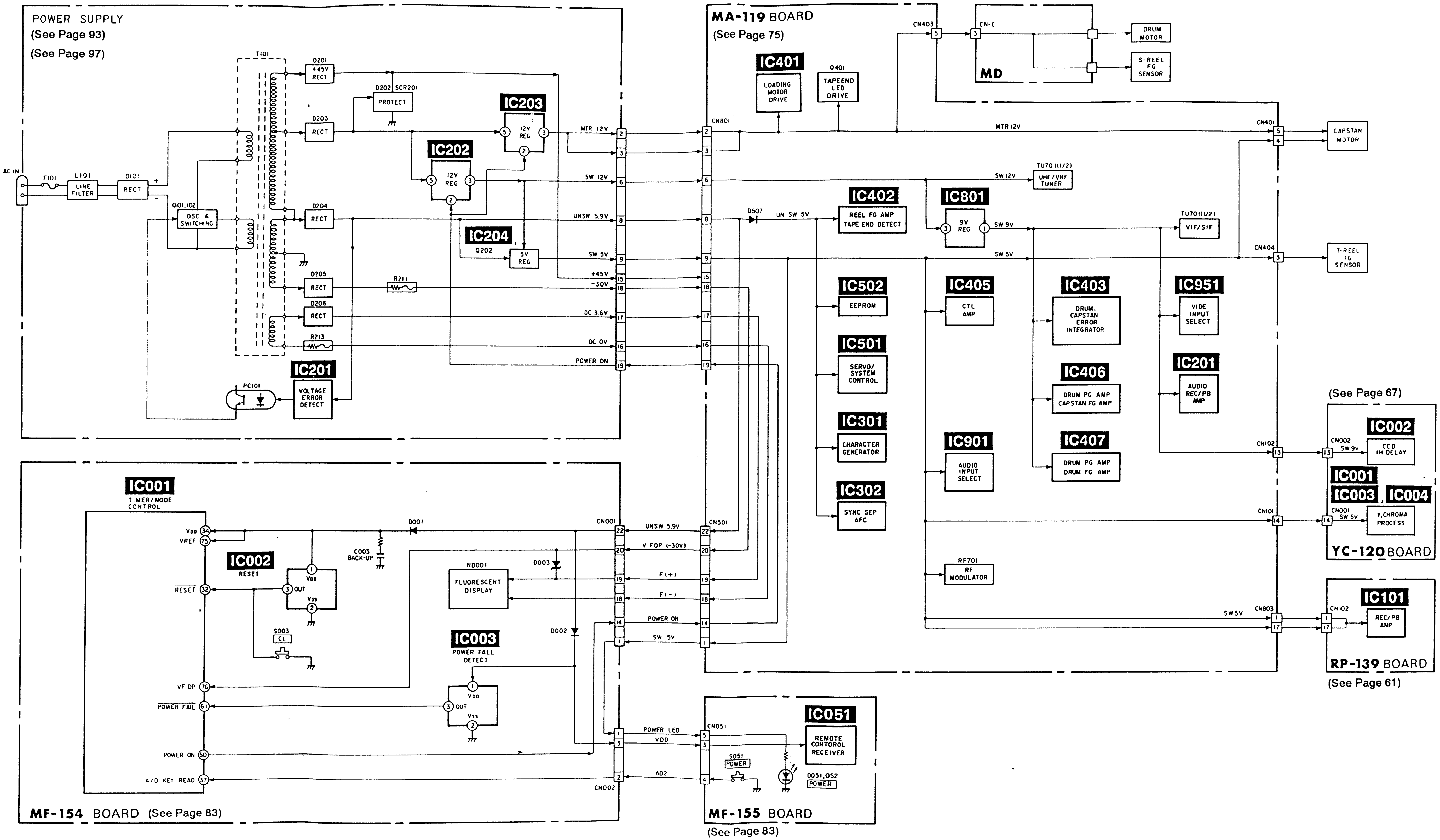

SWITCH BLOCK
(See Page 85)
CLOCK/COUNTER
TIMER REC ON/OFF
QUICK TIMER
COUNTER RESET
INPUT SELECT
REC
TRACKING ▲
PROGRAM +
AUTO/MANUAL
TRACKING ▼
PROGRAM —
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
DUAL MODE SHUTTLE
(See Page 85)
SHUTTLE RING
(ROTARY SWITCH)
PLAY
STOP
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
MF-154 BOARD
(See Page 83)
CN003
CN005
CN004
CN002
IC001
TIMER/MODE CONTROL
KMO 0
KMO 2
KMI 0
KMI 1
KMI 2
KMI 3
S002 PAUSE
S005 TV SYSTEM
AUTO
SLV-X37DH ONLY
S006 COLOR SYSTEM
PAL/MESECAM
NTSC PB ON PAL TV
NTSC 4.43
S004 RENTAL PICTURE
OFF
ON
39 KMO 0
40 KMO 1
41 KMO 2
42 KMO 3
67 KMI 4
68 KMI 5
69 KMI 6
70 KMI 7
63 KMI 0
64 KMI 1
65 KMI 2
66 KMI 3
72 XTAL
X001 4.19MHz
74 EXAL
30 TX
X002 32.768KHz
31 TEX
32 RESET
S003 CL
IC002
RESET PULSE GEN
UNSW 5.9V
D001
34 VDD
75 VREF
IC003
POWER FAIL DETECT
D002
C003 BACK-UP
61 POWER FAIL
62 SIRCS IN
37 AD KEY HEAD
V FDP 76
1S 1 ~ 14S 14
8G 21 ~ 1G 28
ND001
FLUORESCENT DISPLAY
BIAS
D003
VFDP(-30V)
VF(+)
VF(-)
MC S 51
MEM SCLK 77
MEM DATA 55
AFT UP 35
AFT ON 36
S CLOCK 44
SI BUS 45
SO BUS 46
COSMO CS 47
COSMO RESET 49
STROBE 54
BUSY 48
RVO01 SHARPNESS
POWER ON 50
PWM 60
CN001
M CS
MEM SCLK
MEM DATA
MA-119 BOARD (1/6)
(See Page 75)
IC502
EEPROM
CN501
CS
CLK
DI
DO
VCC
D507
UNSW5.9V
AFT UP
AFT ON
SCLK
SO (FROM T/T)
SI (TO T/T)
COSMO CS
COSMO RESET
SYSTEM CONTROL
SCLK
SO (FROM T/T)
STROBE
BUSY
VIDEO
SHARPNESS
POWER ON
POWER
PWM
TUNER
MF-155 BOARD
(See Page 83)
IC051
REMOTE CONTROL RECEIVER
CN051
SIRCS
AD2
POWER LED
SW 5V
S052 EJECT
S051 POWER
D051,052 POWER

3-15. TIMER/MODE CONTROL — MICROPROCESSOR TERMINAL FUNCTION (MF-154 BOARD IC001)

Pin. No.	Port	I/O	Signal	Function
1	S4	O	S1	Display segment signal.
2	S5	O	S9	
3	S6	O	S3	
4	S7	O	S4	
5	S8	O	S5	
6	S9	O	S6	
7	S10	O	S7	
8	S11	O	S8	
9	S12	O	S2	
10	S13	O	S10	
11	S14	O	S11	
12	S15	O	S12	
13	S16	O	S13	
14	S17	O	S14	
15	S18	O		Not used.
16	S19	O		
17	T11	O		
18	T10	O		
19	T9	O		
20	T8	O		
21	T7	O	8G	Display timing signal.
22	T6	O	7G	
23	T5	O	6G	
24	T4	O	5G	
25	T3	O	4G	
26	T2	O	3G	
27	T1	O	2G	
28	T0	O	1G	
29	INT	I		GND
30	TX		TX	Clock for back-up
31	TEX		ETX	
32	$\overline{\text{RST}}$	I	$\overline{\text{RST}}$	Reset signal input.
33	N.C.			Not used.
34	VDD		VDD	5V power supply.
35	AD0	I	AFT UP	AFT up.
36	AD1	I	AFT DOWN	AFT down.
37	AD2	I	A/D KEY IN	Key input (EJECT/POWER).
38	AD3	I		Not used.
39	AD4	O	KMO0	Key matrix output.
40	AD5	O	KMO1	
41	AD6	O	KMO2	
42	AD7	O	KMO3	
43	$\overline{\text{EC}}$	I		Not used.
44	SCLK	O	SCLK0	Serial communication clock.
45	SO	O	S IN0	Serial data output.

Pin. No.	Port	I/O	Signal	Function
46	SI	I	S OUT 0	Serial data input.
47	PA0	O	$\overline{\text{COSMO CS}}$	SS microcomputer chip select signal.
48	PA1	O	OSD BUSY	OSD control signal.
49	PA2	O	$\overline{\text{COSMO RST}}$	SS microcomputer reset signal output.
50	PA3	O	POWER ON	Power control for SW system. "H" output when power on.
51	PF0	O	MEM CS	Tuner memory chip select signal.
52	PF1	O		Not used.
53	PF2	O		
54	PF3	O	OSD STROBE	OSD control signal.
55	PE0	O	MEM DATA	Tuner memory data.
56	PE1	I		Not used.
57	PE2	I		
58	PE3	I		
59	PY0	I/O		
60	PWM	O	PWM	Tuner control.
61	WP	I	$\overline{\text{POWER FAIL}}$	"L" when service interruption (service interruption detection).
62	RMC	I	$\overline{\text{SIRCS IN}}$	Remote control input.
63	PD0	I	KMI 0	Key matrix input.
64	PD1	I	KMI 1	
65	PD2	I	KMI 2	
66	PD3	I	KMI 3	
67	PC0	I	KMI 4	
68	PC1	I	KMI 5	
69	PC2	I	KMI 6	
70	PC3	I	KMI 7	
71	Vss		Vss	GND
72	XTAL	O	XTAL	System clock output.
73	N.C.			Not used.
74	EXTAL	I	EXTAL	System clock input.
75	VREF		VREF	A/D input reference power.
76	VFDP		VFDP	Power for fluorescent indicator.
77	PH0	O	MEM SCLK	Memory control signal.
78	PH1	O		Not used.
79	PH2	O		
80	PH3	O		

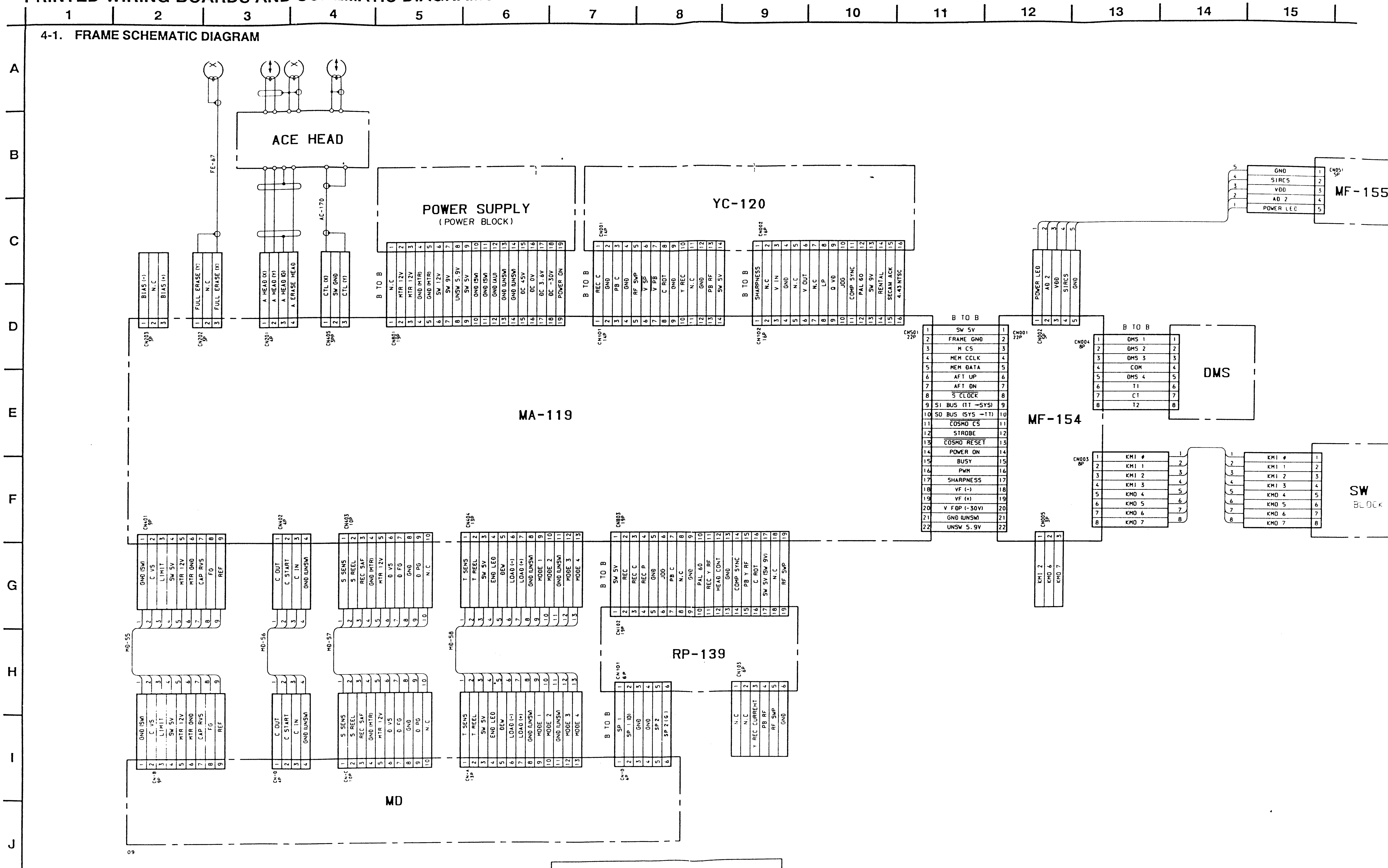
3-16. POWER BLOCK DIAGRAM


POWER SUPPLY
(See Page 93)
(See Page 97)
AC IN
F101
L101 LINE FILTER
D101 RECT
Q101,102 OSC & SWITCHING
T101
D201 +45V RECT
D202 SCR201 PROTECT
D203 RECT
D204 RECT
D205 RECT
D206 RECT
R211
R213
IC203 12V REG
IC202 12V REG
IC204 5V REG
Q202
IC201 VOLTAGE ERROR DETECT
PC101
MTR 12V
SW 12V
UNSW 5.9V
SW 5V
+45V
-30V
DC 3.6V
DC 0V
POWER ON
MA-119 BOARD
(See Page 75)
CN801
IC401 LOADING MOTOR DRIVE
Q401 TAPEEND LED DRIVE
CN403
CN-C
MD
DRUM MOTOR
S-REEL FG SENSOR
CN401
CAPSTAN MOTOR
TU701(1/2) UHF/VHF TUNER
IC402 REEL FG AMP TAPE END DETECT
D507
UN SW 5V
IC801 9V REG
SW 9V
TU701(1/2) VIF/SIF
CN404
T-REEL FG SENSOR
IC502 EEPROM
IC501 SERVO/SYSTEM CONTROL
IC301 CHARACTER GENERATOR
IC302 SYNC SEP AFC
IC405 CTL AMP
IC901 AUDIO INPUT SELECT
RF701 RF MODULATOR
IC403 DRUM, CAPSTAN ERROR INTEGRATOR
IC406 DRUM PG AMP CAPSTAN FG AMP
IC407 DRUM PG AMP DRUM FG AMP
IC951 VIDE INPUT SELECT
IC201 AUDIO REC/PB AMP
CN102
CN101
CN803
SW5V
(See Page 67)
CN002 SW 9V
IC002 CCD 1H DELAY
IC001
IC003, IC004
CN001 SW 5V
Y, CHROMA PROCESS
YC-120 BOARD
CN102
IC101 REC/PB AMP
RP-139 BOARD
(See Page 61)
IC001 TIMER/MODE CONTROL
VDD
VREF
RESET
VF DP
POWER FAIL
POWER ON
A/D KEY READ
IC002 RESET
S003 CL
C003 BACK-UP
D001
D002
D003
ND001 FLUORESCENT DISPLAY
IC003 POWER FALL DETECT
OUT
VSS
CN001
CN002
CN501
UNSW 5.9V
V FDP (-30V)
F(+)
F(-)
SW 5V
POWER LED
VDD
AD2
MF-154 BOARD (See Page 83)
CN051
IC051 REMOTE CONTOROL RECEIVER
S051 POWER
D051,052 POWER
MF-155 BOARD
(See Page 83)

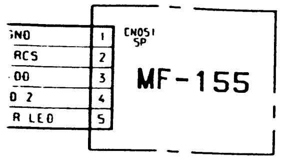
SECTION 4

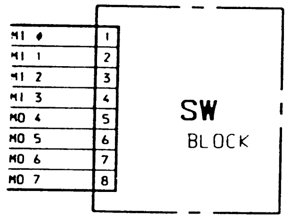
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
ACE HEAD
FE-67
AC-170
POWER SUPPLY
(POWER BLOCK)
YC-120
MF-155
MA-119
MF-154
DMS
SW
BLOCK
RP-139
MD
MD-55
MD-56
MD-57
MD-58
B TO B
CN203 3P
CN202 3P
CN201 4P
CN405 3P
CN801 19P
CN101 14P
CN102 16P
CN501 22P
CN001 22P
CN002 5P
CN004 8P
CN003 8P
CN005 3P
CN051 5P
CN401 9P
CN402 4P
CN403 10P
CN404 13P
CN803 19P
CN102 19P
CN101 6P
CN103 6P
BIAS (-)
N.C
BIAS (+)
FULL ERASE (Y)
FULL ERASE (X)
A HEAD (X)
A HEAD (Y)
A HEAD (G)
A ERASE HEAD
CTL (X)
SW GND
CTL (Y)
MTR 12V
GND (MTR)
SW 12V
SW 9V
UNSW 5.9V
SW 5V
GND (SW)
GND (AU)
GND (UNSW)
DC 45V
DC 0V
DC 3.6V
DC -30V
POWER ON
REC C
GND
PB C
RF SWP
V SP
V PB
C ROT
Y REC
PB RF
SHARPNESS
V IN
V OUT
LP
Q VD
JOG
COMP SYNC
PAL 60
RENTAL
SECAM ACK
4.43 NTSC
SW 5V
FRAME GND
M CS
MEM CCLK
MEM DATA
AFT UP
AFT DN
S CLOCK
SI BUS (TT→SYS)
SO BUS (SYS→TT)
COSMO CS
STROBE
COSMO RESET
POWER ON
BUSY
PWM
SHARPNESS
VF (-)
VF (+)
V FDP (-30V)
GND (UNSW)
UNSW 5.9V
POWER LED
AD 2
VDD
SIRCS
GND
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
KMI 0
KMI 1
KMI 2
KMI 3
KMO 4
KMO 5
KMO 6
KMO 7
C VS
LIMIT
MTR GND
CAP RVS
FG
REF
C OUT
C START
C IN
S SENS
S REEL
REC SAF
D VS
D FG
D PG
T SENS
T REEL
END LED
DEW
LOAD (-)
LOAD (+)
MODE 1
MODE 2
MODE 3
MODE 4
REC
REC P
HEAD CONT
REC Y RF
PB Y RF
SW 5V (SW 9V)
SP 1
SP 1 (D)
SP 2
SP 2 (G)
Y REC CURRENT
09

FRAME **FRAME**





4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- O— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- Circled numbers refer to waveforms.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- -▭- : nonflammable resistor.
- -▭- : fusible resistor.
- ▭ : panel designation.*
- △ : internal component.*
- ▭ : adjustment for repair.*
- ━━ : B+ Line.*
- - - - : B– Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltages are taken with a VOM (Input impedance 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

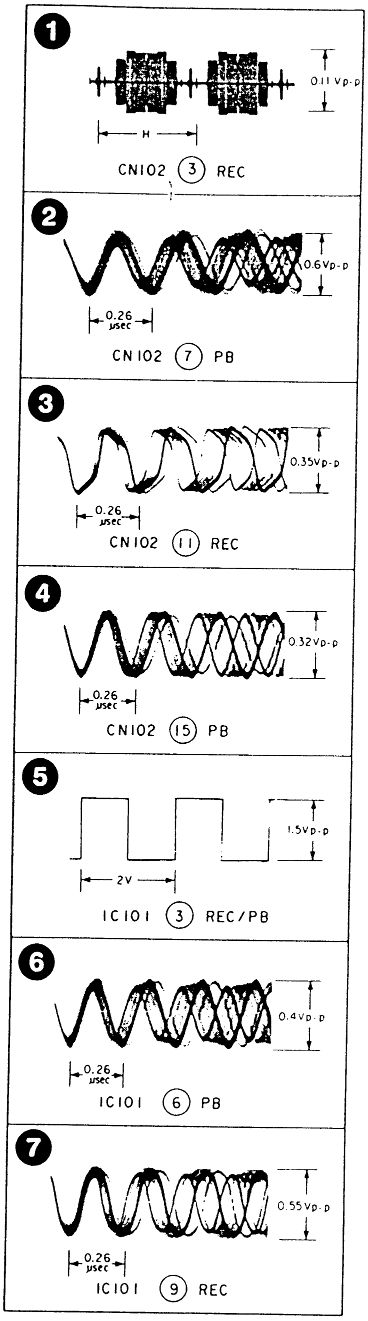
* indicated by the color red.

FRA

RP-139 (REC/PB AMP) PRINTED WIRING BOARD

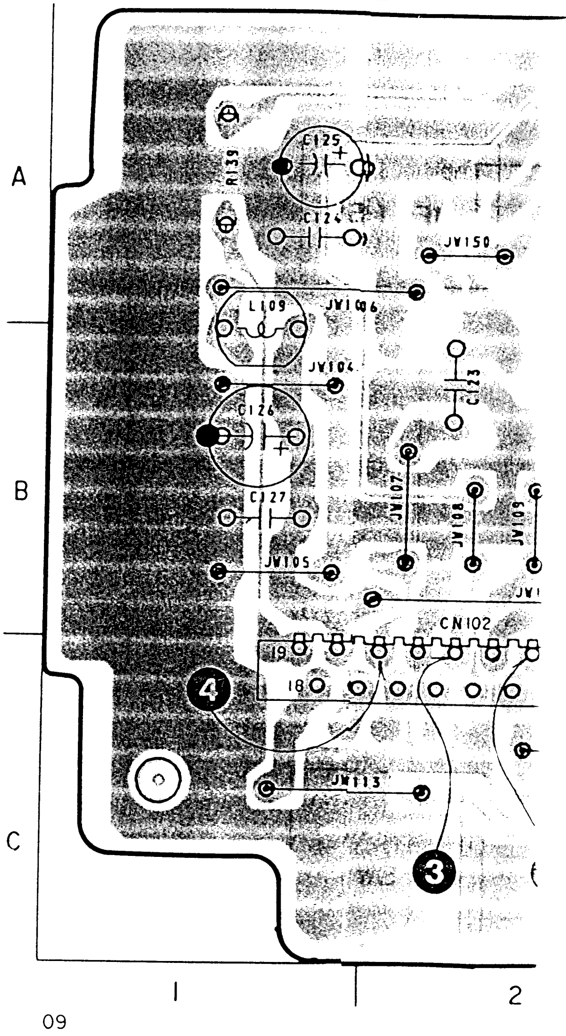
— Ref. No. RP-139 BOARD: 1000 series —

RP-139 BOARD



RP-139 BOARD	
D101	B-7
IC101	A-8
Q101	A-5
Q102	A-4
Q103	A-4
Q105	B-3
Q106	A-3
Q107	B-3
Q110	C-5
Q111	C-4
Q112	C-4

RP-139 BOARD


A
B
C
R139
C125
C124
JW150
L109
JW106
JW104
C123
C126
C127
JW107
JW108
JW109
JW105
CN102
19
18
❹
JW113
❸
1
2
09

(DIODE)

D101 8-719-911-19 DIODE 1SS119

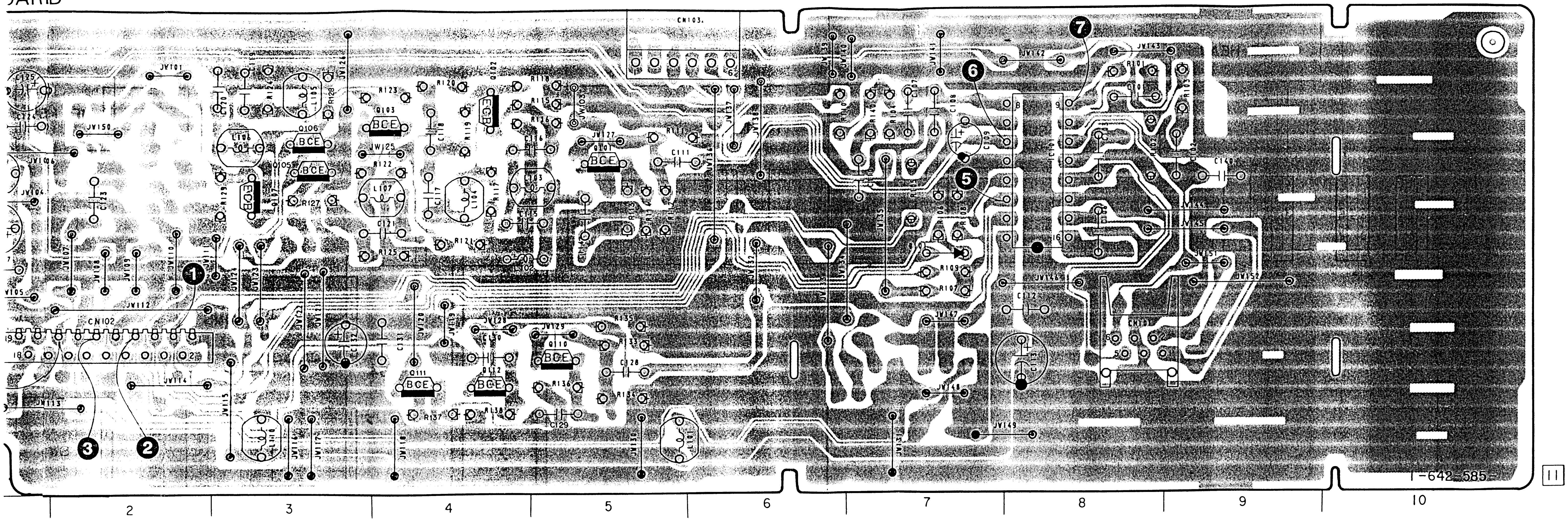
(IC)

IC101 8-759-048-53 IC LA7376-A

Q101
Q102
Q103
Q105
Q106

Q107
Q110
Q111
Q112

)ARD


CN103
CN102
CN101
1-642-585-
11
1
2
3
5
6
7
2
3
4
5
6
7
8
9
10

DIODE)

IODE 1SS119

IC)

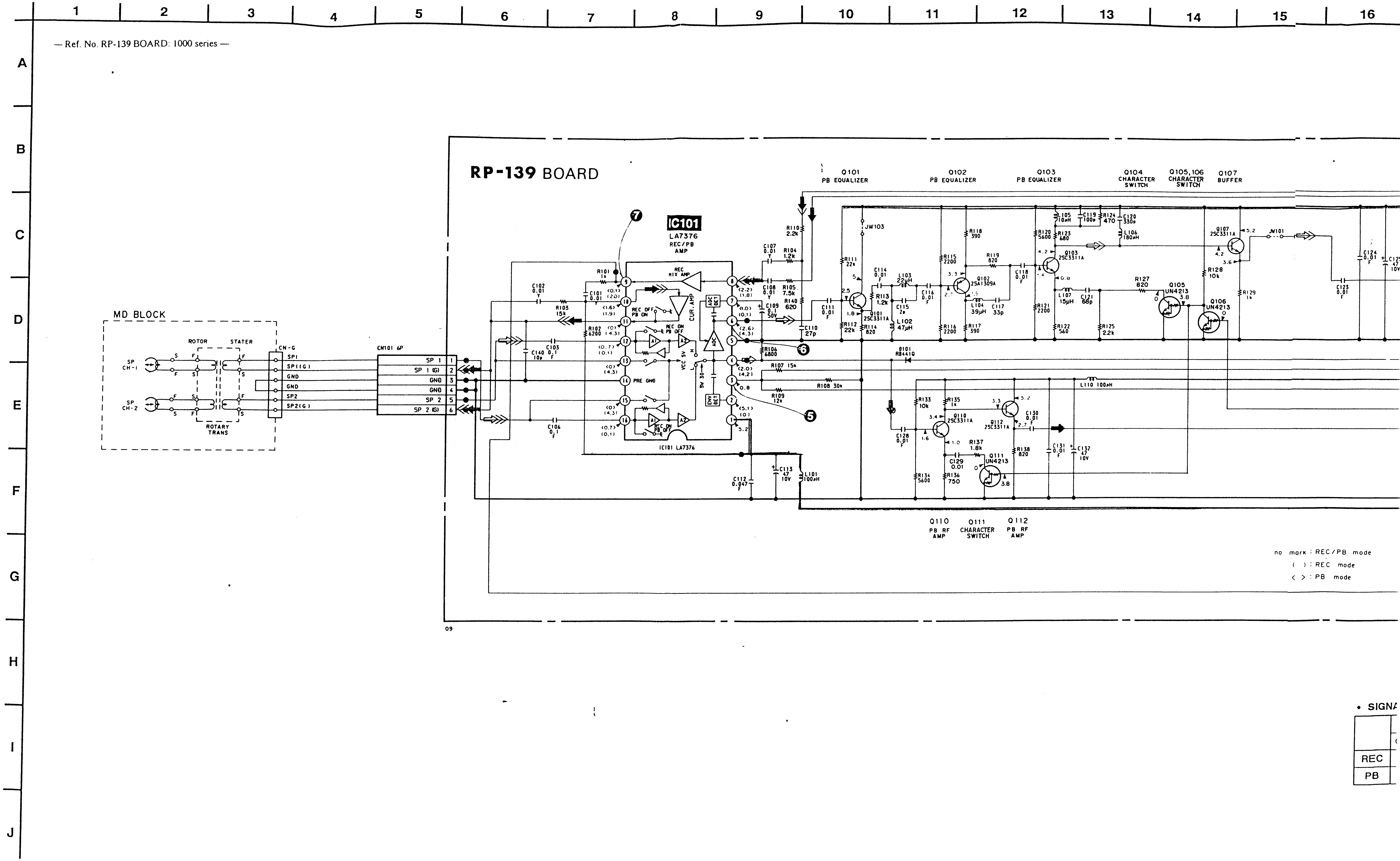
C LA7376-A

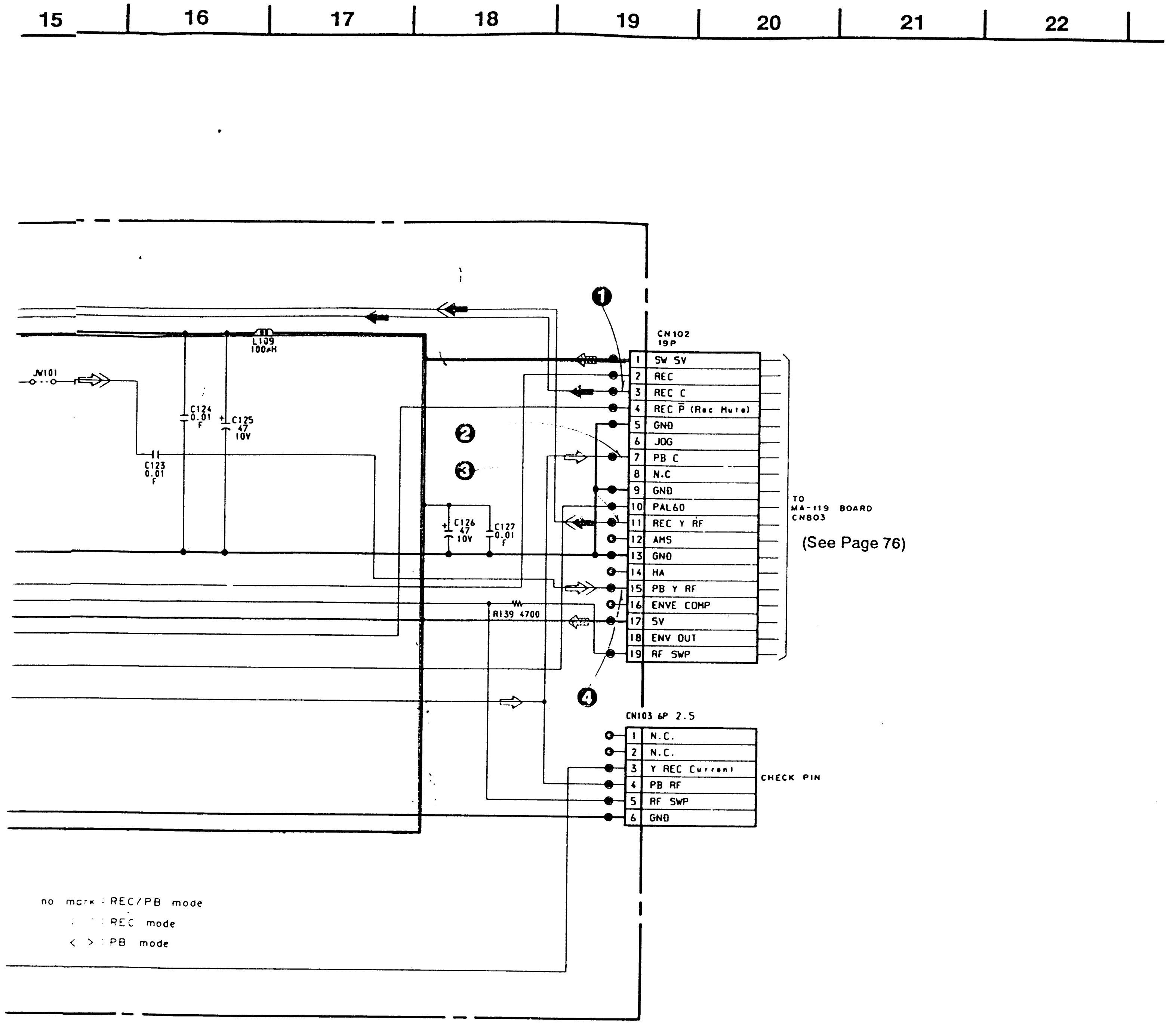
(TRANSISTOR)

Q101	8-729-423-35	TRANSISTOR	2SC3311A-R
Q102	8-729-423-42	TRANSISTOR	2SA1309A-R
Q103	8-729-423-35	TRANSISTOR	2SC3311A-R
Q105	8-729-900-89	TRANSISTOR	DTC144ES
Q106	8-729-900-89	TRANSISTOR	DTC144ES
Q107	8-729-423-35	TRANSISTOR	2SC3311A-R
Q110	8-729-423-35	TRANSISTOR	2SC3311A-R
Q111	8-729-900-89	TRANSISTOR	DTC144ES
Q112	8-729-423-35	TRANSISTOR	2SC3311A-R

RP-139 (REC/PB AMP) SCHEMATIC DIAGRAM

— Ref. No. RP-139 BOARD: 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
RP-139 BOARD
MD BLOCK
ROTOR
STATER
ROTARY TRANS
SP CH-1
SP CH-2
CN-G
SP1
SP1(G)
GND
GND
SP2
SP2(G)
CN101 6P
SP 1
SP 1 (G)
GND
GND
SP 2
SP 2 (G)
IC101
LA7376
REC/PB AMP
IC101 LA7376
REC MIX AMP
CUR. AMP
AGC DET
AGC
ENV DET
REC OFF PB ON
REC ON PB OFF
PRE GND
VCC 5V
5V 30
Q101 PB EQUALIZER
Q102 PB EQUALIZER
Q103 PB EQUALIZER
Q104 CHARACTER SWITCH
Q105,106 CHARACTER SWITCH
Q107 BUFFER
Q110 PB RF AMP
Q111 CHARACTER SWITCH
Q112 PB RF AMP
Q101 2SC3311A
Q102 2SA1309A
Q103 2SC3311A
Q105 UN4213
Q106 UN4213
Q107 2SC3311A
Q110 2SC3311A
Q111 UN4213
Q112 2SC3311A
D101 RB441Q
JW103
JW101
R101 1k
R102 6200
R103 15k
R104 1.2k
R105 7.5k
R106 6800
R107 15k
R108 30k
R109 12k
R110 2.2k
R111 22k
R112 22k
R113 1.2k
R114 820
R115 2200
R116 2200
R117 390
R118 390
R119 820
R120 5600
R121 2200
R122 560
R123 680
R124 470
R125 22k
R127 820
R128 10k
R129 1k
R133 10k
R134 5600
R135 1k
R136 750
R137 1.8k
R138 820
R140 620
C101 0.01
C102 0.01
C103 0.1
C106 0.1
C107 0.01
C108 0.01
C109 0.1 50V
C110 27p
C111 0.01
C112 0.047
C113 47 10V
C114 0.01
C115 2p
C116 0.01
C117 33p
C118 0.01
C119 100p
C120 330p
C121 68p
C123 0.01
C124 0.01
C128 0.01
C129 0.01
C130 0.01
C131 0.01
C132 47 10V
C140 10p
L101 100μH
L102 47μH
L103 22μH
L104 39μH
L105 10μH
L106 180μH
L107 15μH
L110 100μH
❼
❻
❺
09
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
• SIGNA
REC
PB


15
16
17
18
19
20
21
22
L109
100μH
JW101
C124
0.01
F
C125
47
10V
C123
0.01
F
❷
❸
C126
47
10V
C127
0.01
F
R139 4700
❶
❹
CN102
19P
1 SW 5V
2 REC
3 REC C
4 REC P̄ (Rec Mute)
5 GND
6 JOG
7 PB C
8 N.C
9 GND
10 PAL60
11 REC Y RF
12 AMS
13 GND
14 HA
15 PB Y RF
16 ENVE COMP
17 5V
18 ENV OUT
19 RF SWP
TO
MA-119 BOARD
CN803
(See Page 76)
CN103 6P 2.5
1 N.C.
2 N.C.
3 Y REC Current
4 PB RF
5 RF SWP
6 GND
CHECK PIN
no mark : REC/PB mode
: REC mode
< > : PB mode

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡〉	➡〉〉	
PB	⇨	⇨〉	⇨〉〉	

YC-120 (Y/CHROMA PROCESS) PRINTED WIRING BOARD

— Ref. No. YC-120 BOARD: 2000 series —

(DIODE)

D001	8-719-911-19	DIODE	1SS119
D002	8-719-911-19	DIODE	1SS119
D003	8-719-911-19	DIODE	1SS119
D004	8-719-911-19	DIODE	1SS119
D006	8-719-911-19	DIODE	1SS119
D007	8-719-911-19	DIODE	1SS119
D008	8-719-911-19	DIODE	1SS119

(IC)

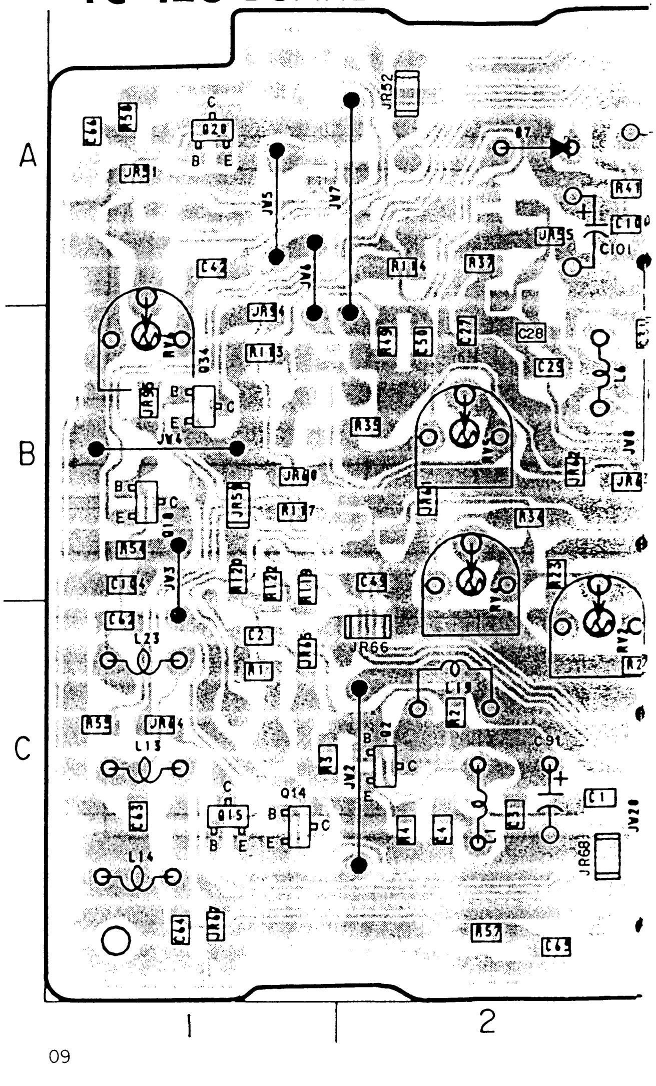
IC001	8-759-046-76	IC	LA7396
IC002	8-759-821-51	IC	LC8992
IC003	8-759-637-11	IC	M52063SP
IC004	8-759-996-63	IC	BA7025L

(TRANSISTOR)

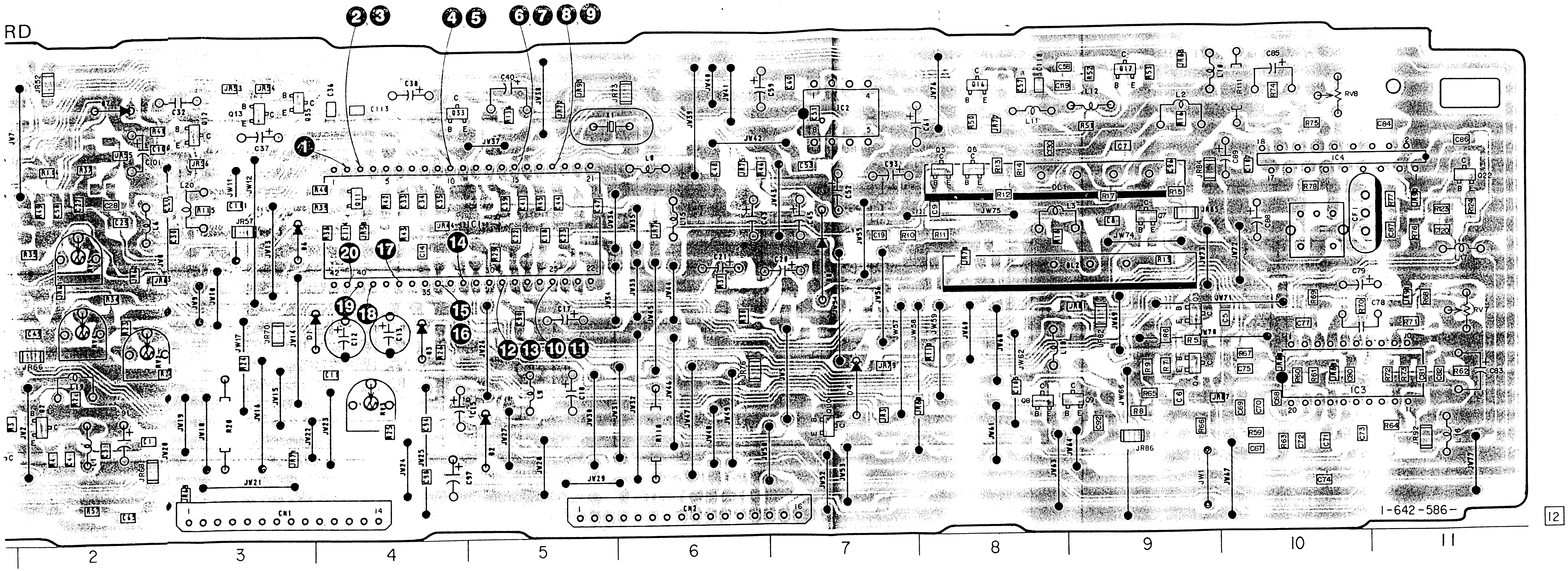
Q002	8-729-422-28	TRANSISTOR	2SD601A-R
Q003	8-729-422-28	TRANSISTOR	2SD601A-R
Q004	8-729-422-28	TRANSISTOR	2SD601A-R
Q005	8-729-422-28	TRANSISTOR	2SD601A-R
Q006	8-729-422-28	TRANSISTOR	2SD601A-R
Q007	8-729-422-28	TRANSISTOR	2SD601A-R
Q008	8-729-421-19	TRANSISTOR	UN2213
Q009	8-729-424-18	TRANSISTOR	UN2113
Q011	8-729-422-37	TRANSISTOR	2SB709A-R
Q012	8-729-422-37	TRANSISTOR	2SB709A-R
Q013	8-729-421-19	TRANSISTOR	UN2213
Q014	8-729-424-56	TRANSISTOR	UN211L
Q015	8-729-424-18	TRANSISTOR	UN2113
Q016	8-729-422-37	TRANSISTOR	2SB709A-R
Q017	8-729-422-37	TRANSISTOR	2SB709A-R
Q018	8-729-422-28	TRANSISTOR	2SD601A-R
Q020	8-729-422-37	TRANSISTOR	2SB709A-R
Q022	8-729-422-28	TRANSISTOR	2SD601A-R
Q033	8-729-421-19	TRANSISTOR	UN2213
Q034	8-729-421-19	TRANSISTOR	UN2213
Q035	8-729-421-19	TRANSISTOR	UN2213
Q110	8-729-421-22	TRANSISTOR	UN2211

YC-120 BOARD	
D001	B-3
D002	C-5
D003	C-4
D006	B-3
D007	A-2
D008	B-7
IC001	B-5
IC002	A-7
IC003	C-10
IC004	A-10
Q002	C-2
Q003	B-9
Q004	C-9
Q005	A-8
Q006	A-8
Q007	B-9
Q008	C-8
Q009	C-9
Q011	B-4
Q012	A-3
Q013	A-3
Q014	C-1
Q015	C-1
Q016	A-8
Q017	A-9
Q018	B-1
Q020	A-1
Q022	B-11
Q033	A-4
Q034	B-1
Q035	A-3
Q110	C-7

YC-120 BOARD

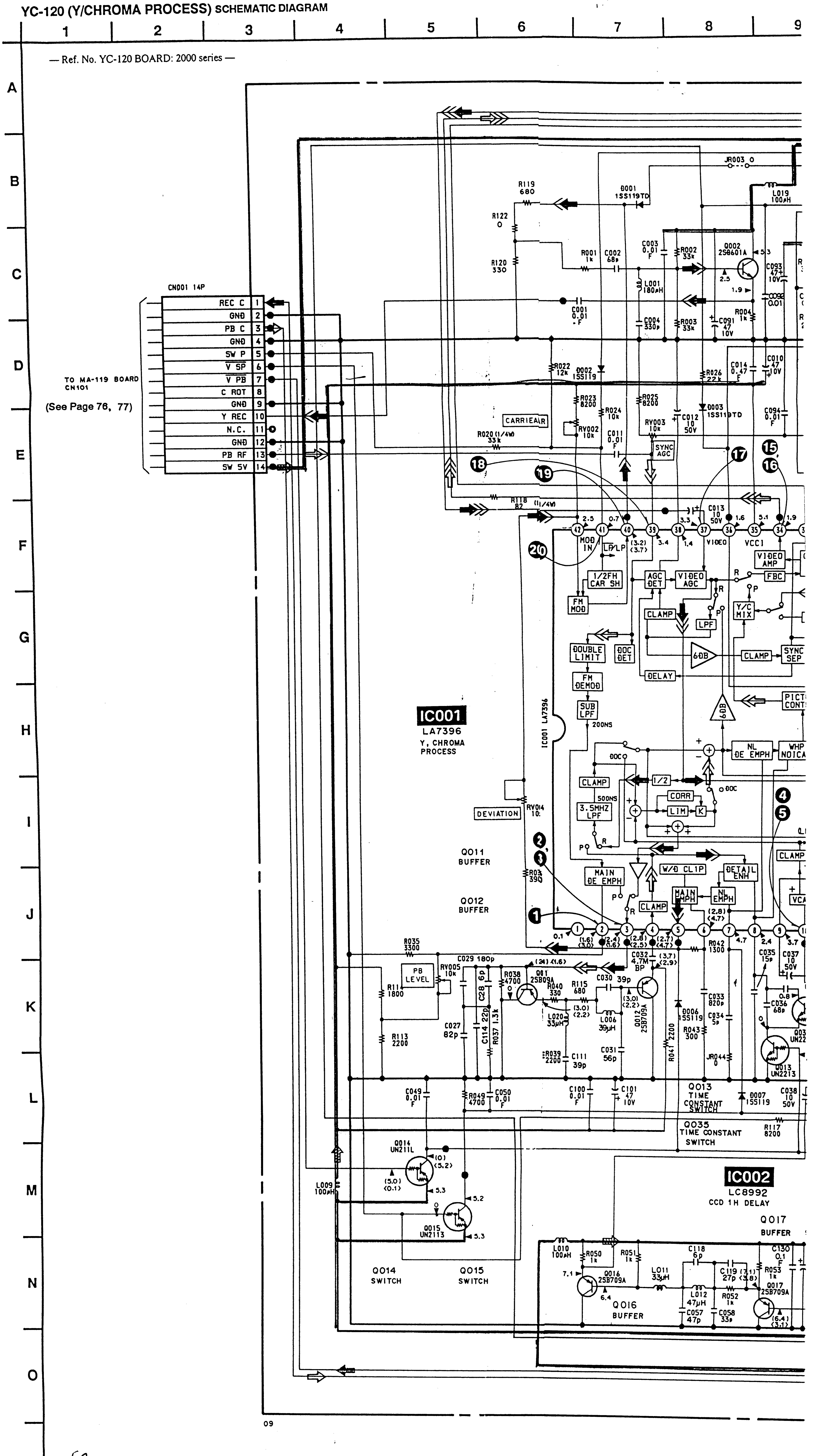


BOARD

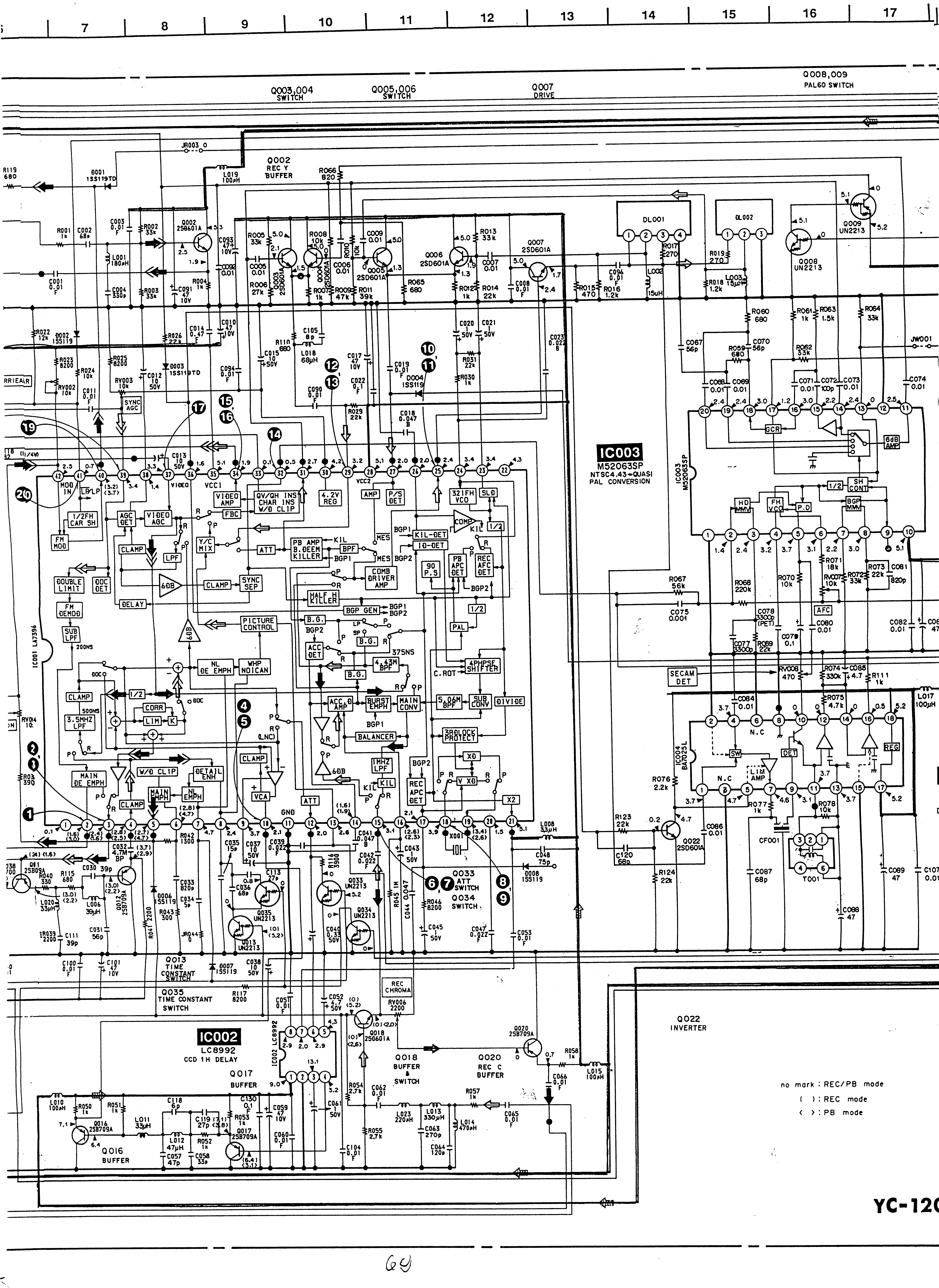

RD
IC1
IC2
IC3
IC4
CN1
CN2
X1
CF1
DL1
DL2
RV8
RV7
1-642-586-

YC-120 (Y/CHROMA PROCESS) SCHEMATIC DIAGRAM

— Ref. No. YC-120 BOARD: 2000 series —


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CN001 14P
REC C 1
GND 2
PB C 3
GND 4
SW P 5
V SP 6
V PB 7
C ROT 8
GND 9
Y REC 10
N.C. 11
GND 12
PB RF 13
SW 5V 14
TO MA-119 BOARD CN101
(See Page 76, 77)
R119 680
R122 0
R120 330
D001 1SS119TD
R001 1k
C002 68p
C003 0.01 F
R002 33k
Q002 2SB601A
L001 180μH
C001 0.01 F
C004 330p
R003 33k
C091 47 10V
R004 1k
C093 47 10V
C092 0.01
JR003 0
L019 100μH
R022 12k
D002 1SS119
R023 8200
R024 10k
RV002 10k
R025 8200
RV003 10k
C012 10 50V
D003 1SS119TD
R026 22k
C014 0.47 F
C010 47 10V
C094 0.01 F
CARRIER
R020 (1/4W) 33k
C011 0.01 F
SYNC AGC
R118 82 (1/4W)
C013 10 50V
MOD IN
LP/LP
1/2FH CAR SH
FM MOD
AGC DET
VIDEO AGC
VIDEO
VCC1
VIDEO AMP
FBC
Y/C MIX
CLAMP
LPF
DOUBLE LIMIT
DOC DET
6dB
SYNC SEP
FM DEMOD
DELAY
SUB LPF
200NS
PICT CONT
IC001
LA7396
Y, CHROMA PROCESS
IC001 LA7396
NL DE EMPH
WHP NOICA
DOC
1/2
CLAMP
500NS
3.5MHZ LPF
CORR
LIM
K
DEVIATION
RV014 10k
Q011 BUFFER
Q012 BUFFER
R036 390
MAIN DE EMPH
W/D CLIP
DETAIL ENH
MAIN EMPH
NL EMPH
VCA
R035 3300
PB LEVEL
RV005 10k
C029 180p
R111 1800
R113 2200
C027 82p
C28 6p
C114 22p
R037 1.3k
R038 4700
Q011 2SB709A
R040 330
L020 33μH
R115 680
C030 39p
L006 39μH
Q012 2SB709A
C032 4.7M BP
R041 2200
D006 1SS119
C033 820p
C034 5p
R042 1300
R043 300
JR044 0
C035 15p
C037 10 50V
C036 68p
Q013 UN2213
R039 2200
C111 39p
C031 56p
C049 0.01 F
R049 4700
C050 0.01 F
C100 0.01 F
C101 47 10V
Q013 TIME CONSTANT SWITCH
D007 1SS119
C038 10 50V
Q035 TIME CONSTANT SWITCH
R117 8200
Q014 UN2111
Q015 UN2113
L009 100μH
Q014 SWITCH
Q015 SWITCH
IC002
LC8992
CCD 1H DELAY
Q017 BUFFER
L010 100μH
R050 1k
R051 1k
Q016 2SB709A
L011 33μH
C118 6p
L012 47μH
C057 47p
R052 1k
C058 33p
C119 27p
C130 0.1 F
R053 1k
Q017 2SB709A
Q016 BUFFER
09

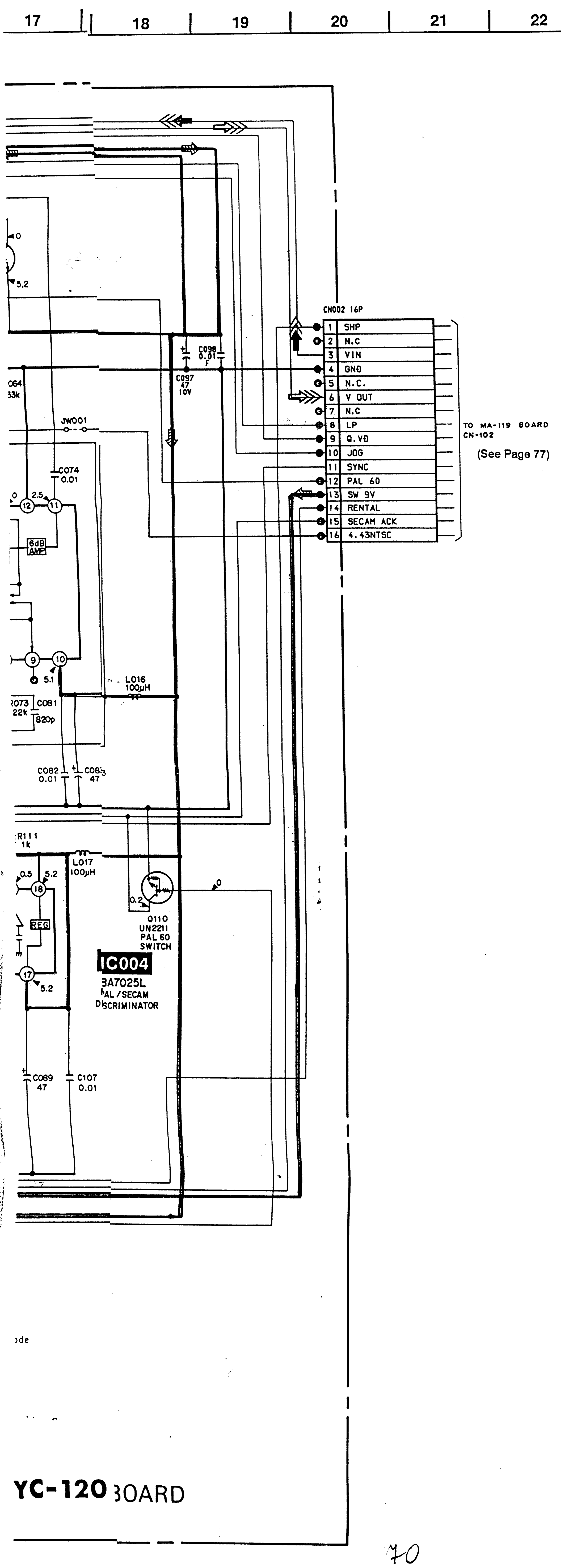
67


7
8
9
10
11
12
13
14
15
16
17
Q003,004
SWITCH
Q005,006
SWITCH
Q007
DRIVE
Q008,009
PAL60 SWITCH
Q002
REC Y
BUFFER
IC003
M52063SP
NTSC4.43→QUASI
PAL CONVERSION
IC001 LA7396
IC002
LC8992
CCD 1H DELAY
IC004
BA7025L
DL001
DL002
FM MOD
1/2FH CAR SH
AGC DET
VIDEO AGC
VIDEO AMP
QV/QH INS CHAR INS W/B CLIP
4.2V REG
P/S DET
321FH VCO
SLD
COMP
KIL-DET
ID-DET
PB AMP B.DEEM KILLER
BPF
COMB DRIVER AMP
HALF H KILLER
BGP GEN
Y/C MIX
ATT
FBC
CLAMP
LPF
SYNC SEP
60B
DELAY
DOUBLE LIMIT
DOC DET
FM DEMOD
SUB LPF
PICTURE CONTROL
NL DE EMPH
WHP NOICAN
B.G.
ACC DET
4.43M BPF
4PHPSE SHIFTER
C.ROT
ACC.D AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
DIVIDE
BALANCER
3RD LOCK PROTECT
1MHZ LPF
KIL
REC APC DET
XO
V XO
X2
VCA
MAIN EMPH
NL EMPH
DETAIL ENH
W/D CLIP
MAIN DE EMPH
3.5MHZ LPF
CORR
LIM
PB APC DET
REC AFC DET
90 P.S
PAL
HD MMV
FH VCO
P.D
BGP MMV
SH CONT
1/2
6dB AMP
GCR
AFC
SECAM DET
SW
DET
LIM AMP
REG
N.C
Q013
TIME CONSTANT SWITCH
Q035
TIME CONSTANT SWITCH
Q033
ATT SWITCH
Q034
SWITCH
Q017
BUFFER
Q016
BUFFER
Q018
BUFFER & SWITCH
Q020
REC C
BUFFER
Q022
INVERTER
REC CHROMA
RV006
2200
T001
CF001
X001

no mark : REC/PB mode
( ) : REC mode
⟨ ⟩ : PB mode

YC-12

69

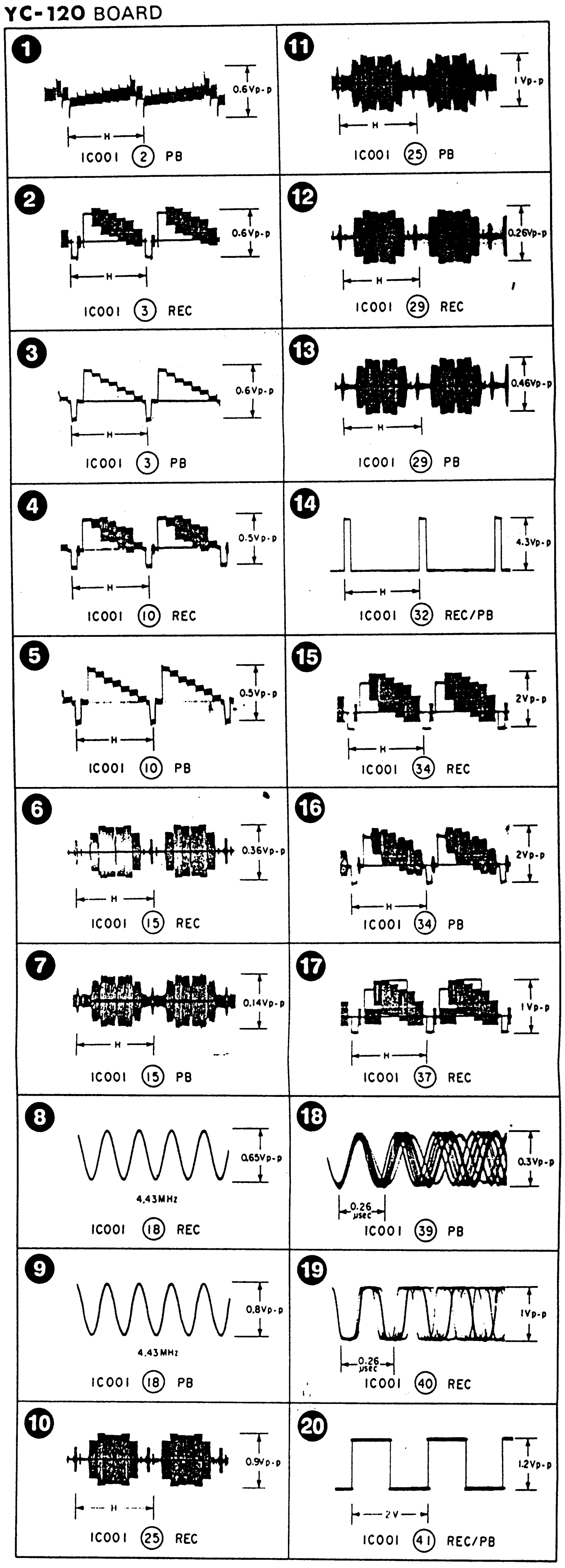

17
18
19
20
21
22
23
24
25
26
27
CN002 16P
1 SHP
2 N.C
3 VIN
4 GND
5 N.C.
6 V OUT
7 N.C
8 LP
9 Q.VD
10 JOG
11 SYNC
12 PAL 60
13 SW 9V
14 RENTAL
15 SECAM ACK
16 4.43NTSC
TO MA-119 BOARD CN-102
(See Page 77)
C098 0.01 F
C097 47 10V
064 33k
JW001
C074 0.01
2.5
12
11
6dB AMP
9
10
5.1
5.2
L016 100μH
073 22k
C081 820p
C082 0.01
C083 47
R111 1k
L017 100μH
0.5
5.2
18
REG
17
5.2
0.2
0
Q110 UN2211 PAL 60 SWITCH
IC004
3A7025L
PAL/SECAM
DISCRIMINATOR
C089 47
C107 0.01

YC-120 BOARD

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	
PB	⇨	⇨⇨	⇨⇨⇨	

YC-120 BOARD



(DIODE)

D402	8-719-101-50	DIODE	RD5.1E-L2
D403	8-719-911-19	DIODE	1SS119
D501	8-719-911-19	DIODE	1SS119
D506	8-719-911-19	DIODE	1SS119
D507	8-719-200-82	DIODE	11ES2
D701	8-759-157-40	IC	uPC574J
D702	8-719-911-19	DIODE	1SS119
D703	8-719-911-19	DIODE	1SS119
D704	8-719-911-19	DIODE	1SS119

(IC)

IC201	8-759-805-20	IC	LA7297
IC301	8-759-045-59	IC	uPD6450GT-606
IC302	8-759-996-03	IC	LVA519S
⚠IC401	8-759-822-09	IC	LB1641
IC402	8-759-912-77	IC	LM324N
IC403	8-759-990-82	IC	TL082CP
⚠IC405	8-759-246-14	IC	TA8823N
IC406	8-759-981-85	IC	RC4556D
IC407	8-759-135-80	IC	uPC358C
IC501	8-752-837-57	IC	CXP80724-034Q
IC502	8-759-501-99	IC	ST93C46AB1
IC801	8-759-982-34	IC	RC78M09FA
IC901	8-759-927-56	IC	BA7021
IC951	8-759-513-05	IC	LVA521S

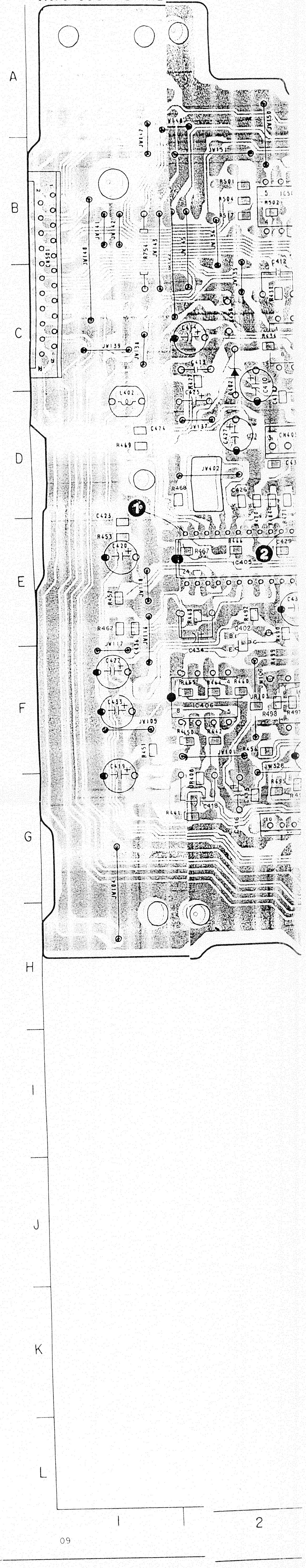
(TRANSISTOR)

Q103	8-729-424-18	TRANSISTOR	UN2113
Q201	8-729-140-96	TRANSISTOR	2SD774-34
Q301	8-729-422-28	TRANSISTOR	2SD601A-R
Q302	8-729-421-19	TRANSISTOR	UN2213
Q305	8-729-422-37	TRANSISTOR	2SB709A-R
Q307	8-729-422-37	TRANSISTOR	2SB709A-R
Q401	8-729-423-42	TRANSISTOR	2SA1309A-R
Q402	8-729-424-12	TRANSISTOR	UN2112
Q404	8-729-422-28	TRANSISTOR	2SD601A-R
Q406	8-729-422-28	TRANSISTOR	2SD601A-R
Q407	8-729-422-37	TRANSISTOR	2SB709A-R
Q408	8-729-422-37	TRANSISTOR	2SB709A-R
Q409	8-729-422-28	TRANSISTOR	2SD601A-R
Q410	8-729-422-28	TRANSISTOR	2SD601A-R
Q701	8-729-424-08	TRANSISTOR	UN2111
Q703	8-729-424-08	TRANSISTOR	UN2111
Q705	8-729-424-08	TRANSISTOR	UN2111
Q709	8-729-422-28	TRANSISTOR	2SD601A-R
Q710	8-729-422-28	TRANSISTOR	2SD601A-R
Q714	8-729-422-28	TRANSISTOR	2SD601A-R
Q715	8-729-422-28	TRANSISTOR	2SD601A-R
Q717	8-729-422-28	TRANSISTOR	2SD601A-R
Q718	8-729-422-37	TRANSISTOR	2SB709A-R
Q719	8-729-422-37	TRANSISTOR	2SB709A-R
Q720	8-729-421-19	TRANSISTOR	UN2213
Q721	8-729-422-37	TRANSISTOR	2SB709A-R
Q901	8-729-423-35	TRANSISTOR	2SC3311A-R
Q902	8-729-422-28	TRANSISTOR	2SD601A-R
Q903	8-729-422-28	TRANSISTOR	2SD601A-R

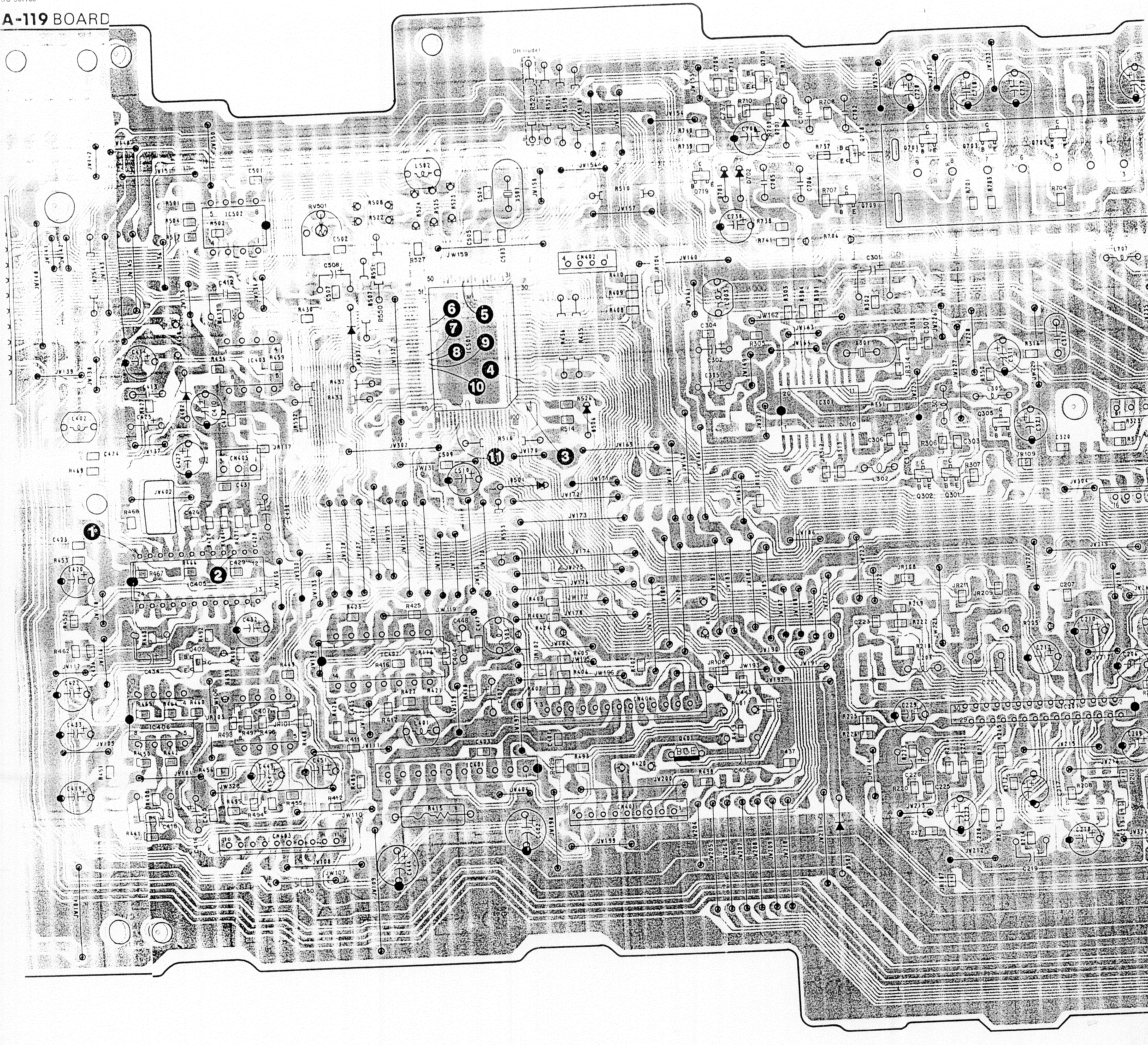
MA-119 BOARD

D402	C-2
D403	C-3
D501	D-5
D506	D-5
D507	G-7
D701	A-7
D702	B-7
D703	B-7
D704	C-11
IC201	F-9
IC301	D-7
IC302	D-10
IC401	F-4
IC402	E-4
IC403	C-3
IC405	E-2
IC406	F-2
IC407	F-3
IC501	C-4
IC502	B-3
IC801	J-15
IC901	G-15
IC951	E-15
Q103	E-11
Q201	E-11
Q301	D-8
Q302	D-8
Q305	D-9
Q307	D-12
Q401	F-6
Q402	E-2
Q404	F-12
Q406	F-12
Q407	E-12
Q408	E-12
Q409	F-12
Q410	F-12
Q701	B-8
Q703	B-9
Q705	B-9
Q709	B-7
Q710	A-7
Q714	B-14
Q715	C-14
Q717	B-13
Q718	B-8
Q719	B-6
Q720	C-10
Q721	C-11
Q901	H-15
Q902	H-15
Q903	H-15

MA-119 BOARD

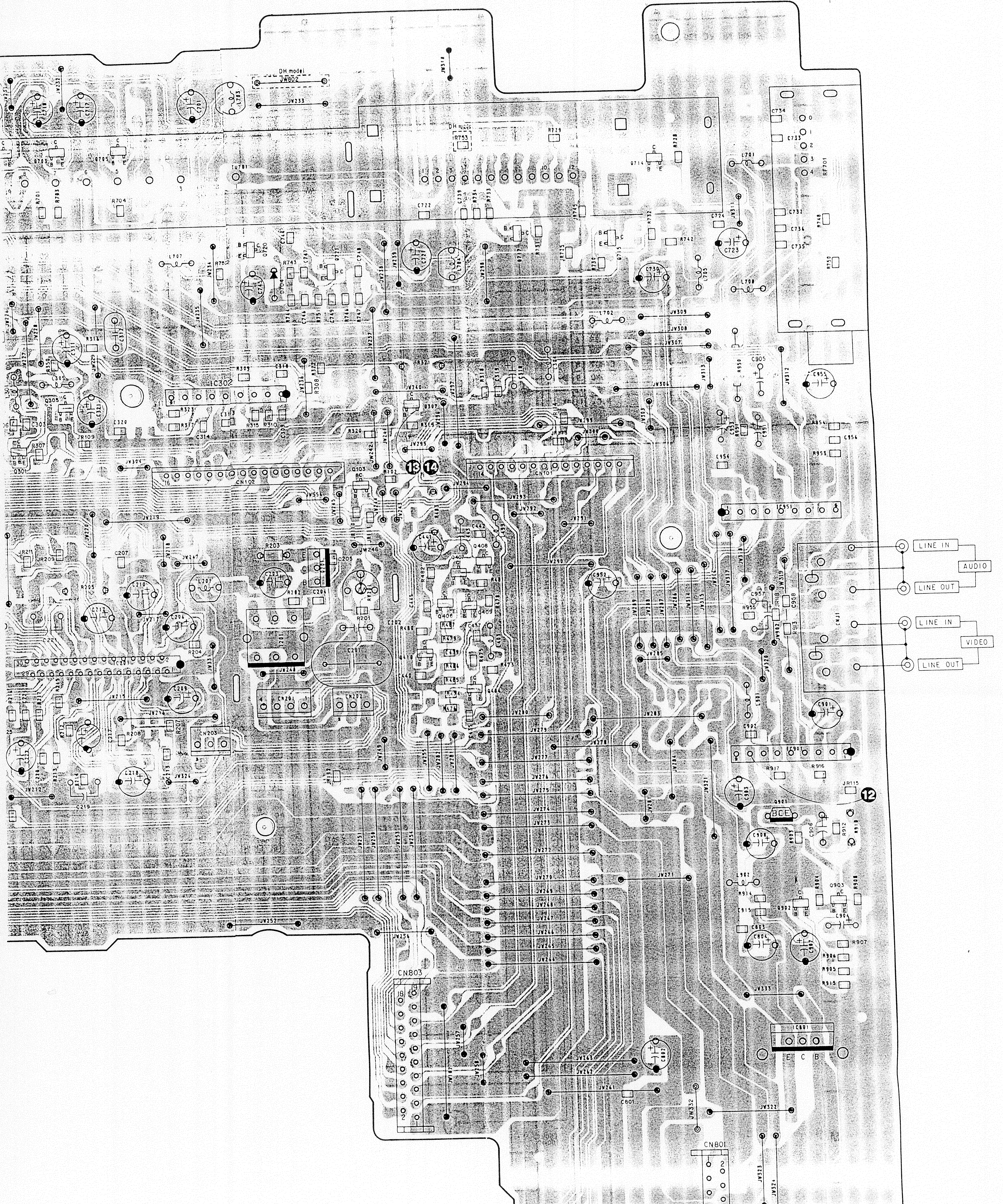


A-119 BOARD


DH model
IC501
IC502
IC301
IC403
IC406
IC401
IC402
CN402
CN401
CN403
CN405
X501
X301
RV501
L402
L401
L502
L302
L305
Q701
Q703
Q705
Q709
Q301
Q302
Q305
Q402
1
2
3
4
5
6
7
8
9
10
11

1 2 3 4 5 6 7 8 9

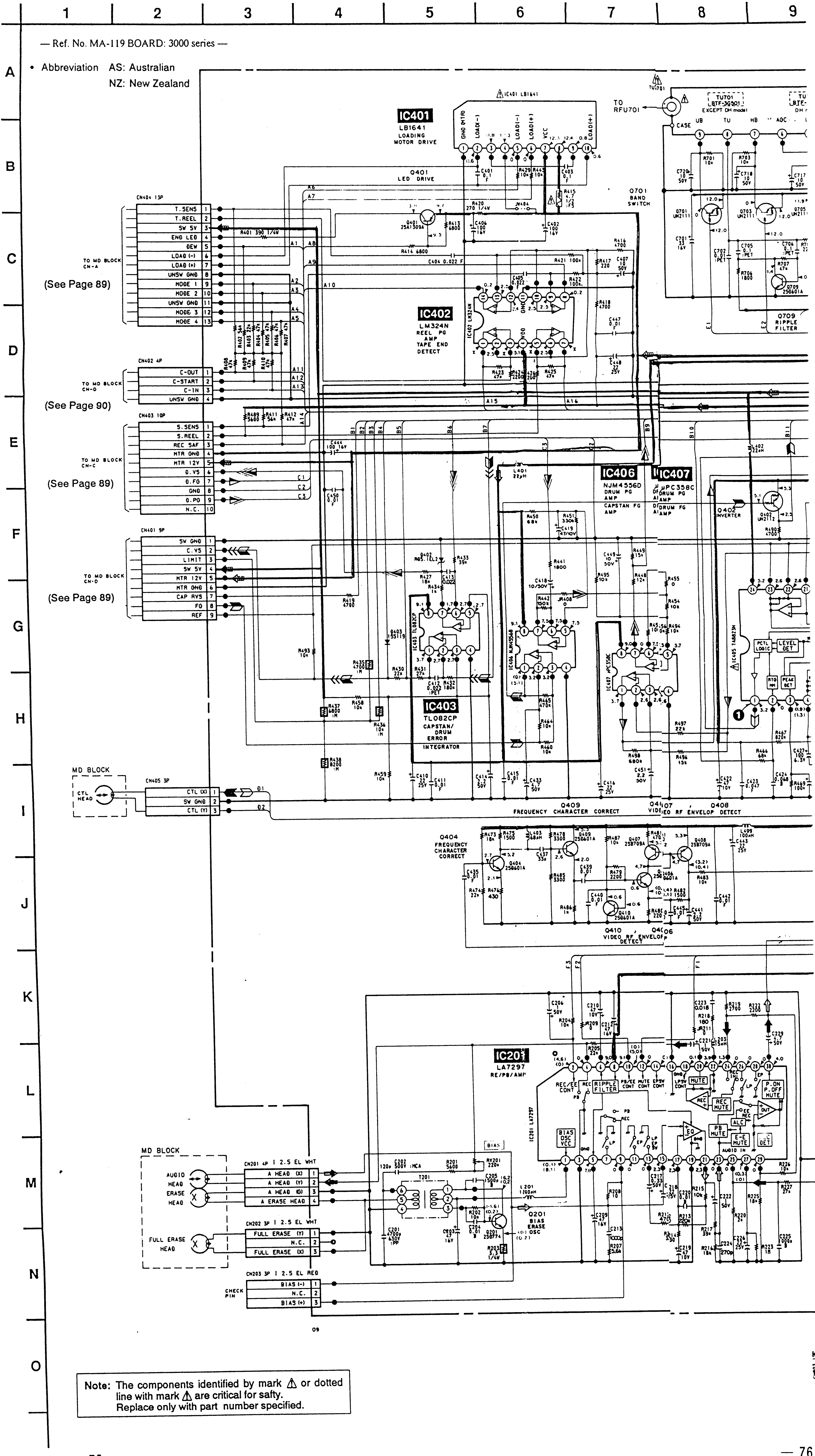
-16-


DH model
JW802
IC302
CN102
CN101
IC951
IC901
IC801
E C B
CN803
CN801
CN201
CN202
CN203
LINE IN
AUDIO
LINE OUT
LINE IN
VIDEO
LINE OUT
RF701
1-642-587-
13
8
9
10
11
12
13
14
15

MA-119 (SERVO/SYSTEM CONTROL, AUDIO, TUNER) SCHEMATIC DIAGRAM

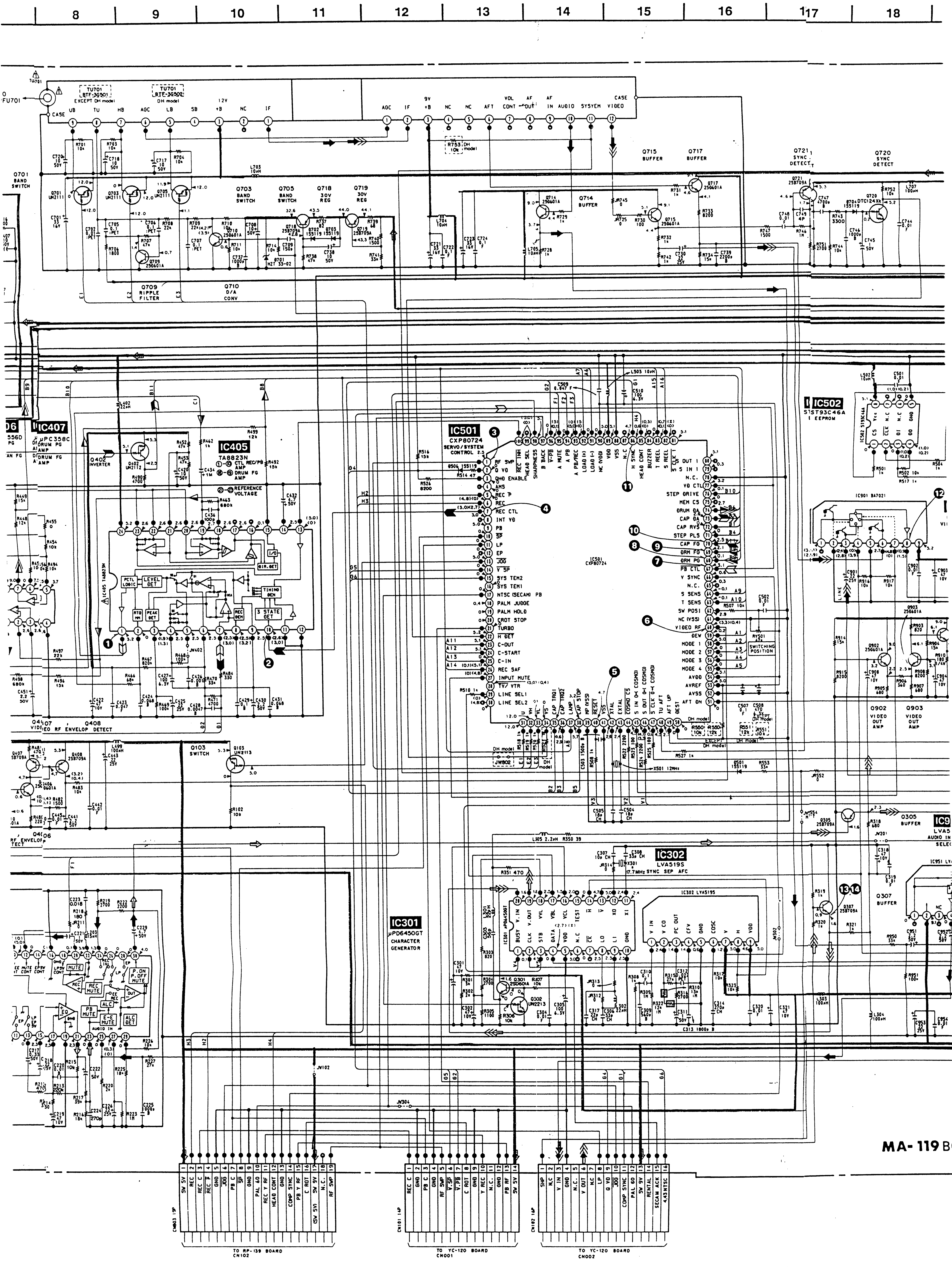
— Ref. No. MA-119 BOARD: 3000 series —

- Abbreviation AS: Australian
  NZ: New Zealand



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
IC401
LB1641
LOADING MOTOR DRIVE
Q401
LED DRIVE
IC402
LM324N
REEL PG AMP
TAPE END DETECT
IC403
TL082CP
CAPSTAN/DRUM ERROR INTEGRATOR
IC406
NJM4556D
DRUM PG AMP
CAPSTAN FG AMP
IC407
μPC358C
DRUM PG AMP
DRUM FG AMP
Q402
INVERTER
Q409
FREQUENCY CHARACTER CORRECT
Q404
FREQUENCY CHARACTER CORRECT
Q407
VIDEO RF ENVELOP DETECT
Q408
Q410
VIDEO RF ENVELOP DETECT
Q406
Q701
BAND SWITCH
Q709
RIPPLE FILTER
TO RFU701
TU701
BTF-3G501
EXCEPT DH model
CASE
CN404 13P
T.SENS
T.REEL
SW 5V
END LED
DEW
LOAD (-)
LOAD (+)
UNSW GND
MODE 1
MODE 2
UNSW GND
MODE 3
MODE 4
TO MD BLOCK CN-A
(See Page 89)
CN402 4P
C-OUT
C-START
C-IN
UNSW GND
TO MD BLOCK CN-D
(See Page 90)
CN403 10P
S.SENS
S.REEL
REC SAF
MTR GND
MTR 12V
D.VS
D.FG
GND
D.PG
N.C.
TO MD BLOCK CN-C
(See Page 89)
CN401 9P
SW GND
C.VS
LIMIT
SW 5V
MTR 12V
MTR GND
CAP RVS
FG
REF
TO MD BLOCK CN-D
(See Page 89)
MD BLOCK
CTL HEAD
CN405 3P
CTL (X)
SW GND
CTL (Y)
IC201
LA7297
RE/PB/AMP
MD BLOCK
AUDIO HEAD
ERASE HEAD
FULL ERASE HEAD
CN201 4P 1 2.5 EL WHT
A HEAD (X)
A HEAD (Y)
A HEAD (G)
A ERASE HEAD
CN202 3P 1 2.5 EL WHT
FULL ERASE (Y)
N.C.
FULL ERASE (X)
CN203 3P 1 2.5 EL RED
CHECK PIN
BIAS (-)
N.C.
BIAS (+)
Q201
BIAS ERASE OSC
T201
L201

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

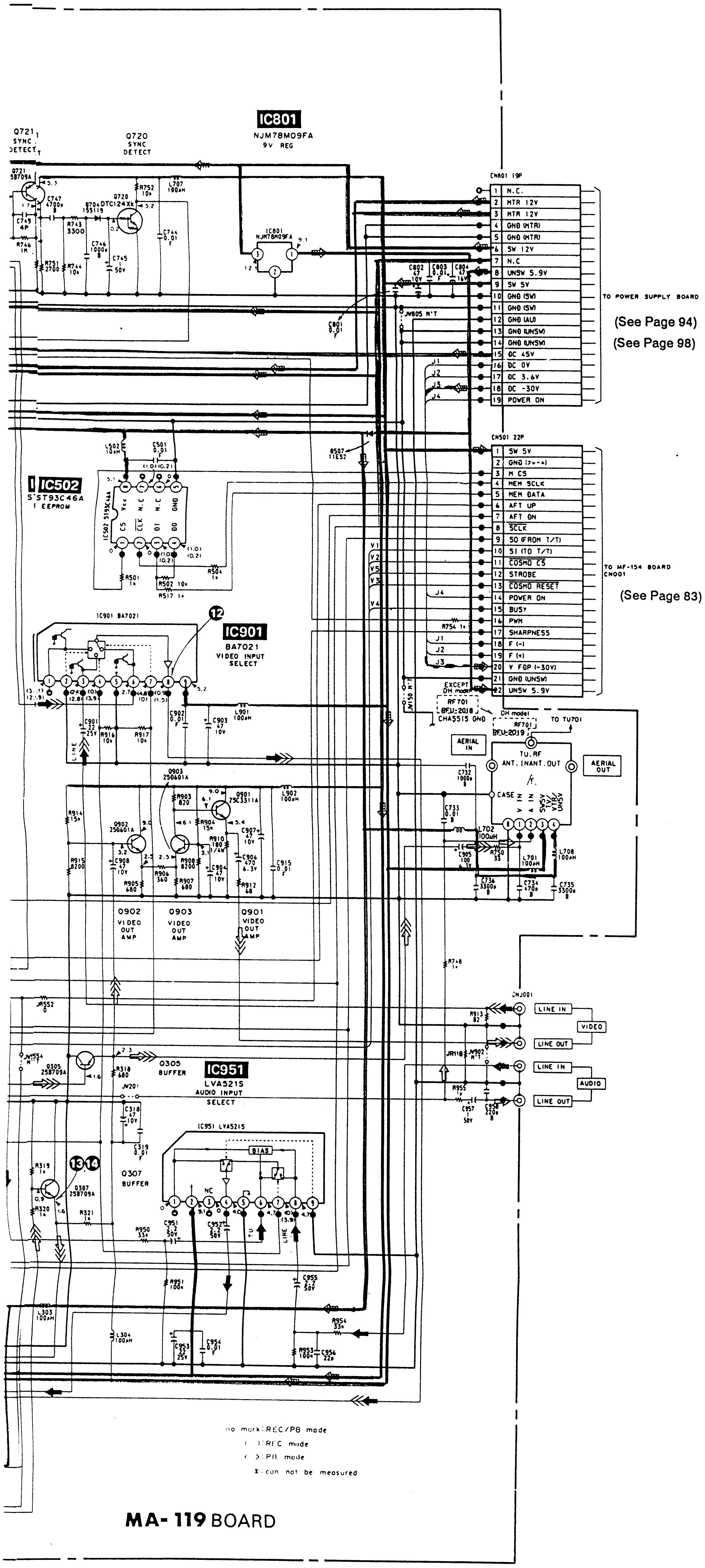

8
9
10
11
12
13
14
15
16
17
18
TU701
BTF-3G501 EXCEPT DH model
BTF-3G502 DH model
Q701 BAND SWITCH
Q703 BAND SWITCH
Q705 BAND SWITCH
Q718 30V REG
Q719 30V REG
Q709 RIPPLE FILTER
Q710 D/A CONV
Q714 BUFFER
Q715 BUFFER
Q717 BUFFER
Q721 SYNC DETECT
Q720 SYNC DETECT
IC407 μPC358C DRUM PG AMP DRUM FG AMP
Q402 INVERTER
IC405 TA8823N CTL REC/PB AMP DRUM FG AMP REFERENCE VOLTAGE
Q407 Q408 RF ENVELOP DETECT
Q103 SWITCH
IC501 CXP80724 SERVO/SYSTEM CONTROL
IC502 S1ST93C46A EEPROM
IC901 BA7021
Q902 VIDEO OUT AMP
Q903 VIDEO OUT AMP
IC302 LVA519S 17.7MHz SYNC SEP AFC
IC301 μPD6450GT CHARACTER GENERATOR
Q305 BUFFER
Q307 BUFFER
RY501 SWITCHING POSITION
X501 12MHz
X301
CN603 19P TO RP-139 BOARD CN102
CN101 14P TO YC-120 BOARD CN001
CN102 16P TO YC-120 BOARD CN002

(See Page 63)

(See Page 67)

(See Page 70)

MA-119 B


IC801
NJM78M09FA
9V REG
Q721 SYNC DETECT
Q720 SYNC DETECT
IC502
S-ST93C46A
EEPROM
IC901
BA7021
VIDEO INPUT SELECT
Q902 VIDEO OUT AMP
Q903 VIDEO OUT AMP
Q901 VIDEO OUT AMP
IC951
LVA521S
AUDIO INPUT SELECT
Q305 BUFFER
Q307 BUFFER
BIAS
CN801 19P
1 N.C.
2 HTR 12V
3 HTR 12V
4 GND (HTR)
5 GND (HTR)
6 SW 12V
7 N.C
8 UNSW 5.9V
9 SW 5V
10 GND (SW)
11 GND (SW)
12 GND (AU)
13 GND (UNSW)
14 GND (UNSW)
15 DC 45V
16 DC 0V
17 DC 3.6V
18 DC -30V
19 POWER ON
TO POWER SUPPLY BOARD
(See Page 94)
(See Page 98)
CN501 22P
1 SW 5V
2 GND
3 M CS
4 MEM SCLK
5 MEM DATA
6 AFT UP
7 AFT DN
8 SCLK
9 SO (FROM T/T)
10 SI (TO T/T)
11 COSMO CS
12 STROBE
13 COSMO RESET
14 POWER ON
15 BUSY
16 PWM
17 SHARPNESS
18 F (-)
19 F (+)
20 V FDP (-30V)
21 GND (UNSW)
22 UNSW 5.9V
TO MF-154 BOARD CN001
(See Page 83)
EXCEPT DH model
RF701 BFU-2018
CHASSIS GND
DH model RF701 BFU-2019
TO TU701
AERIAL IN
TU, RF ANT. INANT. OUT
AERIAL OUT
CASE
CNJ001
LINE IN
LINE OUT
VIDEO
LINE IN
LINE OUT
AUDIO
⑫
⑬⑭

no mark : REC/PB mode
( ) : REC mode
< > : PB mode
✻ : can not be measured

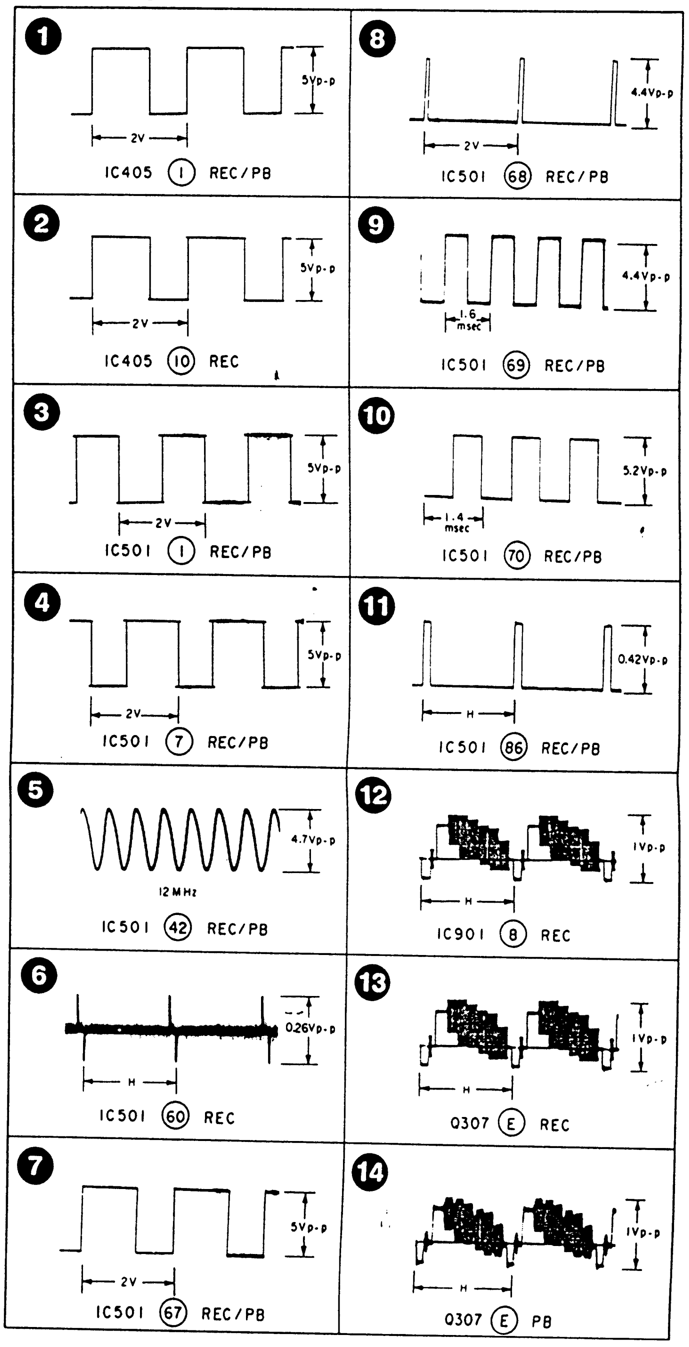
MA-119 BOARD

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡》	➡
PB			⇨》	⇨

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷›	
Drum servo (speed and phase)		▷》	
Capstan speed servo		⊃	
Capstan phase servo		⊃›	
Capstan servo (speed and phase)		⊃》	
Ref. signal	➤		▷

MA-119 BOARD


❶
5Vp-p
2V
IC405 ① REC/PB
❽
4.4Vp-p
2V
IC501 ㊳ REC/PB
❷
5Vp-p
2V
IC405 ⑩ REC
❾
4.4Vp-p
1.6 msec
IC501 ㊴ REC/PB
❸
5Vp-p
2V
IC501 ① REC/PB
❿
5.2Vp-p
1.4 msec
IC501 ㊵ REC/PB
⓫
0.42Vp-p
H
IC501 (86) REC/PB
❹
5Vp-p
2V
IC501 ⑦ REC/PB
❺
4.7Vp-p
12MHz
IC501 ㊷ REC/PB
⓬
1Vp-p
H
IC901 ⑧ REC
❻
0.26Vp-p
H
IC501 ㊿ REC
⓭
1Vp-p
H
Q307 Ⓔ REC
❼
5Vp-p
2V
IC501 (67) REC/PB
⓮
1Vp-p
H
Q307 Ⓔ PB

78

MF-154 (TIMER/MODE CONTROL), MF-155 (REMOTE CONTROL RECEIVER, EJECT/POWER SWITCH) PRINTED WIRING BOARDS

- Abbreviation
DH model: Chines

— Ref. No. MF-154 BOARD: 4000 series, MF-155 BOARD: 5000 series —

MF-154 BOARD

D001	C-10
D002	C-10
D003	D-11
D004	C-9
D005	C-9
D006	C-9
D007	C-8
D008	B-5
D009	A-7
D010	B-6
D011	B-6
D012	B-6
D013	B-2
D014	A-2
D015	A-2
D016	A-2
D017	A-3
D018	A-3
D019	A-3
D020	B-3
IC001	B-5
IC002	C-7
IC003	C-9

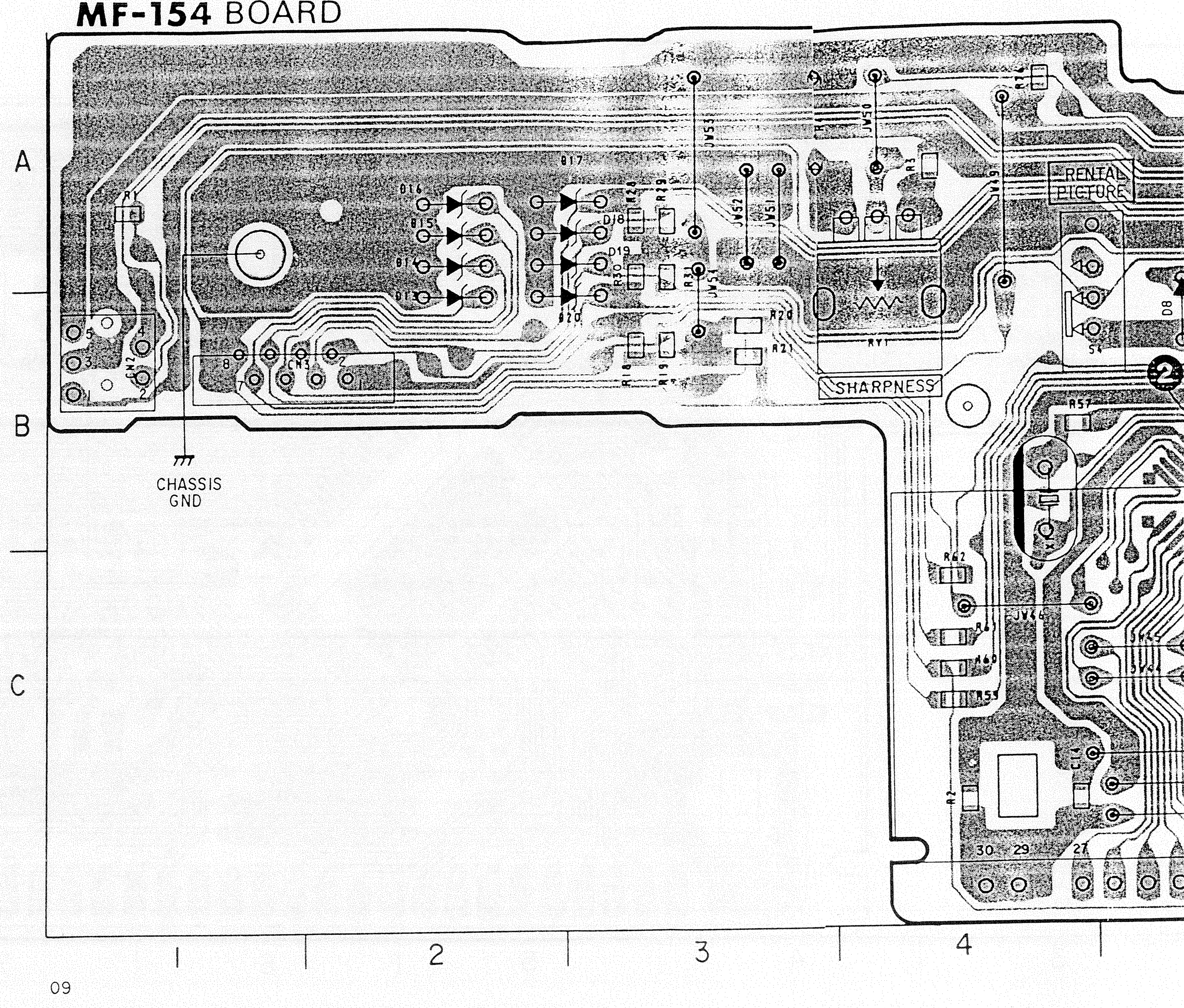
〈 DIODE 〉

D001	8-719-911-19	DIODE	1SS119	
D002	8-719-911-19	DIODE	1SS119	
D003	8-719-110-06	DIODE	RD8.2ES-B1	
D004	8-719-911-19	DIODE	1SS119	
D005	8-719-911-19	DIODE	1SS119	
D006	8-719-911-19	DIODE	1SS119	
D007	8-719-911-19	DIODE	1SS119	
D008	8-719-911-19	DIODE	1SS119	
D009	8-719-911-19	DIODE	1SS119	(DH MODEL)
D010	8-719-911-19	DIODE	1SS119	
D011	8-719-911-19	DIODE	1SS119	
D012	8-719-911-19	DIODE	1SS119	
D013	8-719-109-93	DIODE	RD6.2ES-B2	
D014	8-719-109-93	DIODE	RD6.2ES-B2	
D015	8-719-109-93	DIODE	RD6.2ES-B2	
D016	8-719-109-93	DIODE	RD6.2ES-B2	
D017	8-719-109-93	DIODE	RD6.2ES-B2	
D018	8-719-109-93	DIODE	RD6.2ES-B2	
D019	8-719-109-93	DIODE	RD6.2ES-B2	
D020	8-719-109-93	DIODE	RD6.2ES-B2	

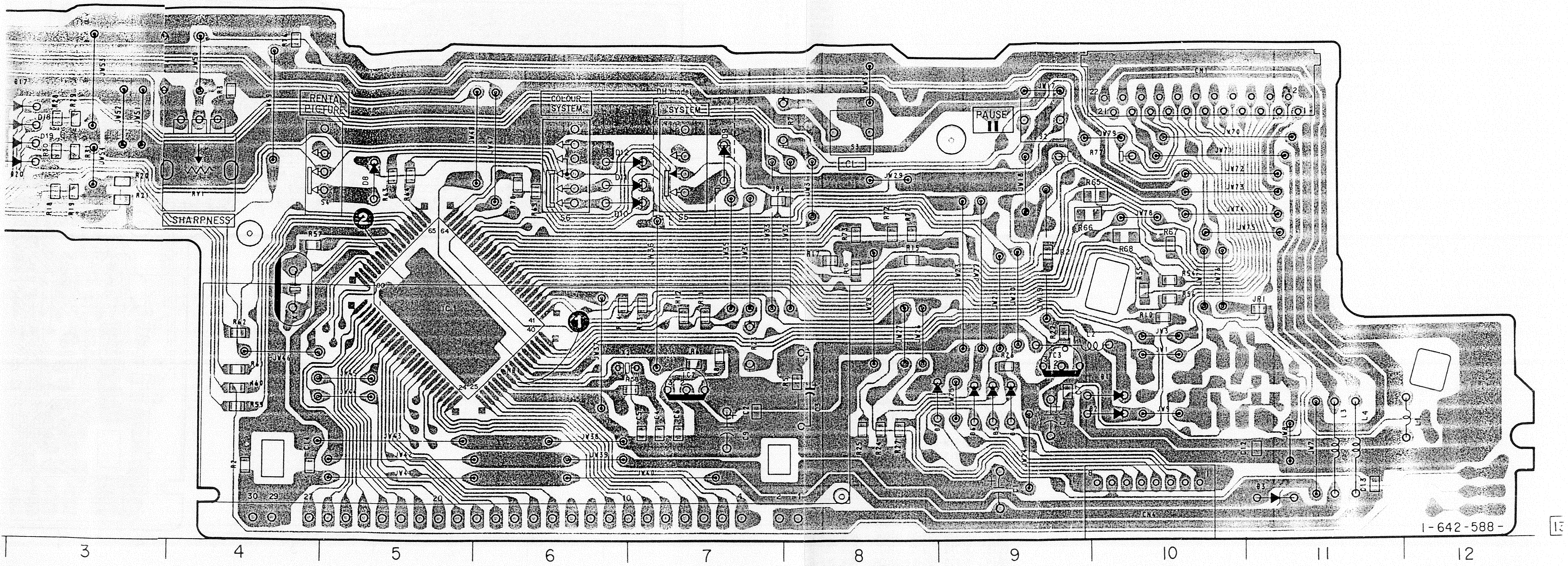
〈 IC 〉

IC001	8-752-832-64	IC	CXP50116-275Q
IC002	8-759-515-58	IC	PST572H
IC003	8-759-510-43	IC	PST572C

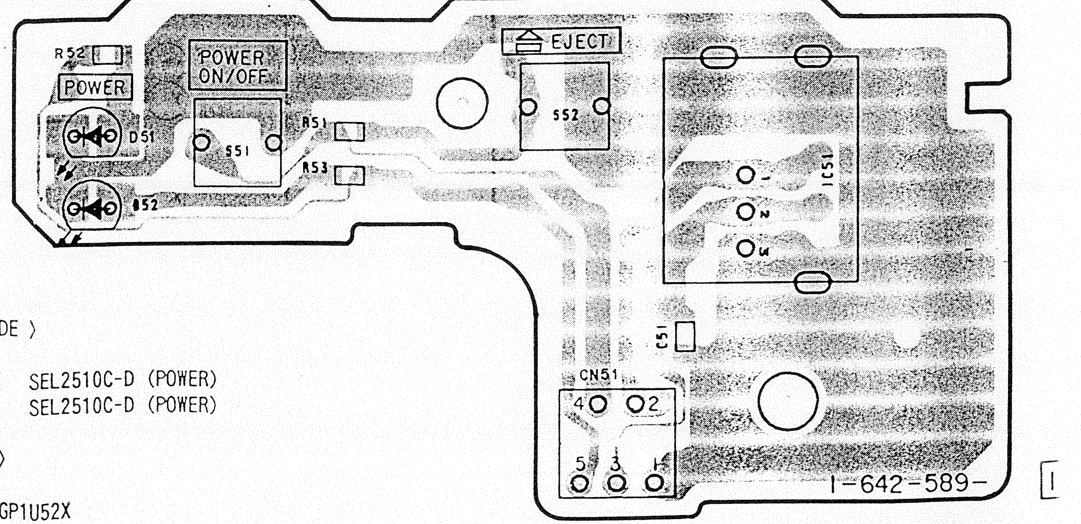
MF-154 BOARD


A
B
C
1
2
3
4
09
CHASSIS GND
SHARPNESS
RENTAL PICTURE
D16
D15
D14
D13
D17
D18
D19
D20
R1
R2
R18
R19
R20
R21
R24
R30
R31
R42
R46
R53
R57
RV1
JW50
JW51
JW52
S1
D8
30
29
27

TCH) PRINTED WIRING BOARDS • Abbreviation DH model: Chinese model


RENTAL PICTURE
COLOUR SYSTEM
DH model
SYSTEM
PAUSE
SHARPNESS
RV1
S4
S5
S6
S3
IC1
IC2
IC3
CN1
CN4
1-642-588-
3
4
5
6
7
8
9
10
11
12

MF-155 BOARD


POWER
POWER ON/OFF
EJECT
R52
D51
D52
S51
S52
R51
R53
IC51
C51
CN51
4
2
5
3
1
1-642-589-

(DIODE)

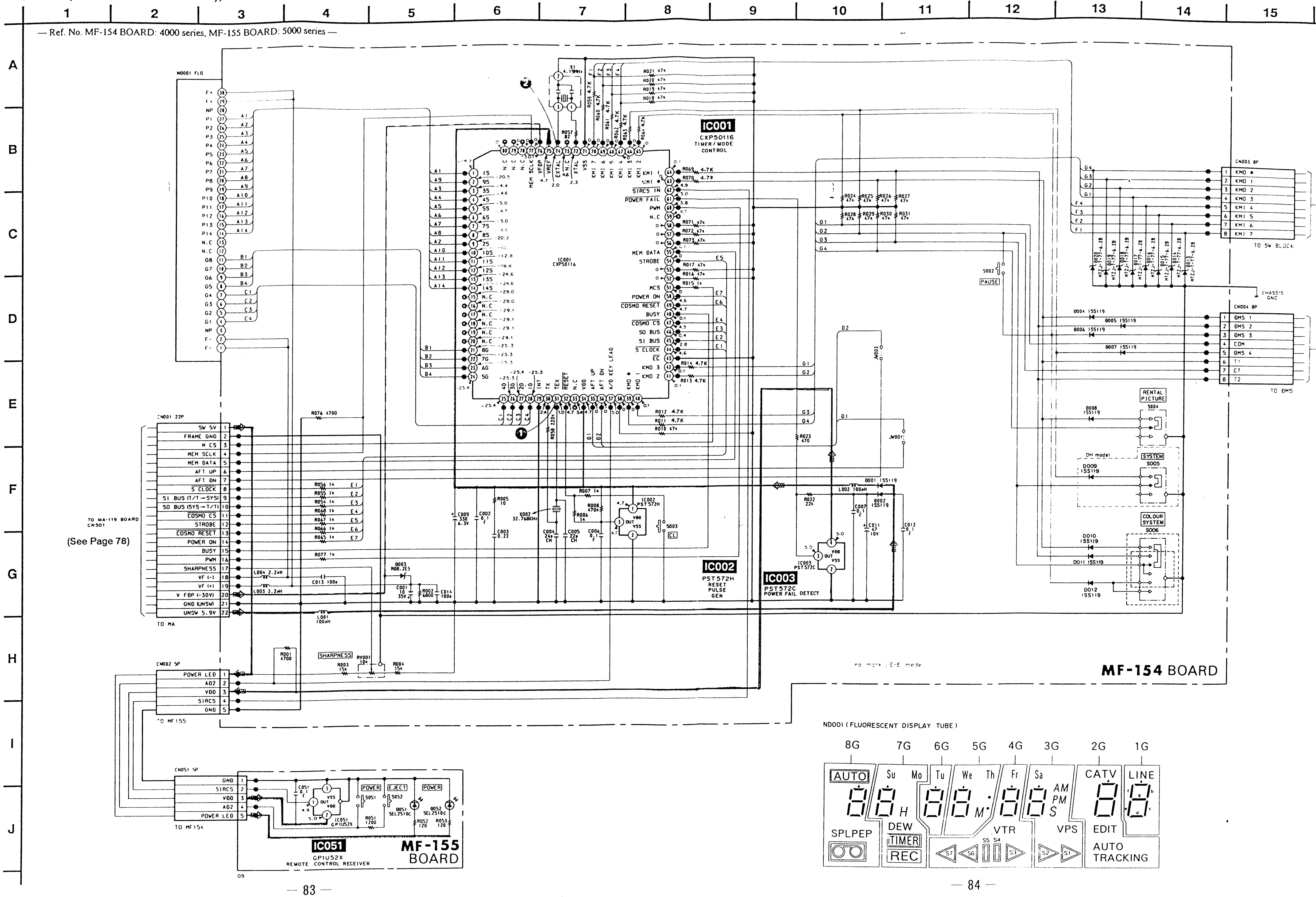
D051 8-719-303-02 DIODE SEL2510C-D (POWER)
D052 8-719-303-02 DIODE SEL2510C-D (POWER)

(IC)

IC051 1-466-131-21 IC GP1U52X

MF-154 (TIMER/MODE CONTROL), MF-155 (REMOTE CONTROL RECEIVER, EJECT/POWER SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. MF-154 BOARD: 4000 series, MF-155 BOARD: 5000 series —



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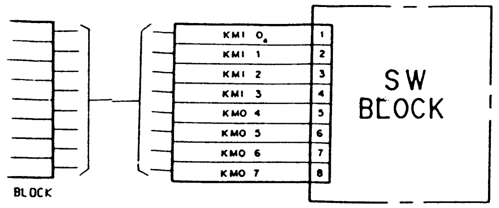
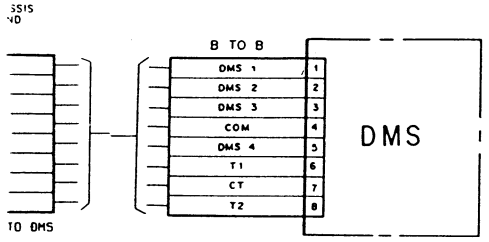
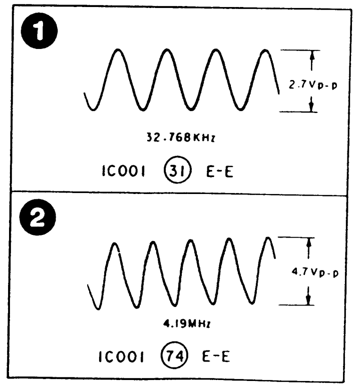
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
ND001 FLD
IC001
CXP50116
TIMER / MODE CONTROL
X1 4.19MHz
IC002
PST572H
RESET PULSE GEN
IC003
PST572C
POWER FAIL DETECT
CN001 22P
SW 5V
FRAME GND
M CS
MEM SCLK
MEM DATA
AFT UP
AFT DN
S CLOCK
SI BUS (T/T→SYS)
SO BUS (SYS→T/T)
COSMO CS
STROBE
COSMO RESET
POWER ON
BUSY
PWM
SHARPNESS
VF (-)
VF (+)
V FDP (-30V)
GND (UNSW)
UNSW 5.9V
TO MA
TO MA-119 BOARD CN501
(See Page 78)
CN002 5P
POWER LED
AO2
VDD
SIRCS
GND
TO MF155
SHARPNESS
RV001
CN003 8P
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
TO SW BLOCK
CHASSIS GND
CN004 8P
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
TO DMS
S002 PAUSE
RENTAL PICTURE S004
DH model
SYSTEM S005
COLOUR SYSTEM S006
S003 CL
no mark : E-E mode
MF-154 BOARD
CN051 5P
GND
SIRCS
VDD
AO2
POWER LED
TO MF154
IC051
GP1U52X
REMOTE CONTROL RECEIVER
POWER S051
EJECT S052
POWER
D051 SEL2510C
D052 SEL2510C
MF-155 BOARD
ND001 (FLUORESCENT DISPLAY TUBE)
8G
7G
6G
5G
4G
3G
2G
1G
AUTO
Su
Mo
Tu
We
Th
Fr
Sa
CATV
LINE
H
M
AM
PM
S
DEW
TIMER
REC
SPLPEP
VTR
VPS
EDIT
AUTO TRACKING
S7
S6
S5
S4
S3
S2
S1

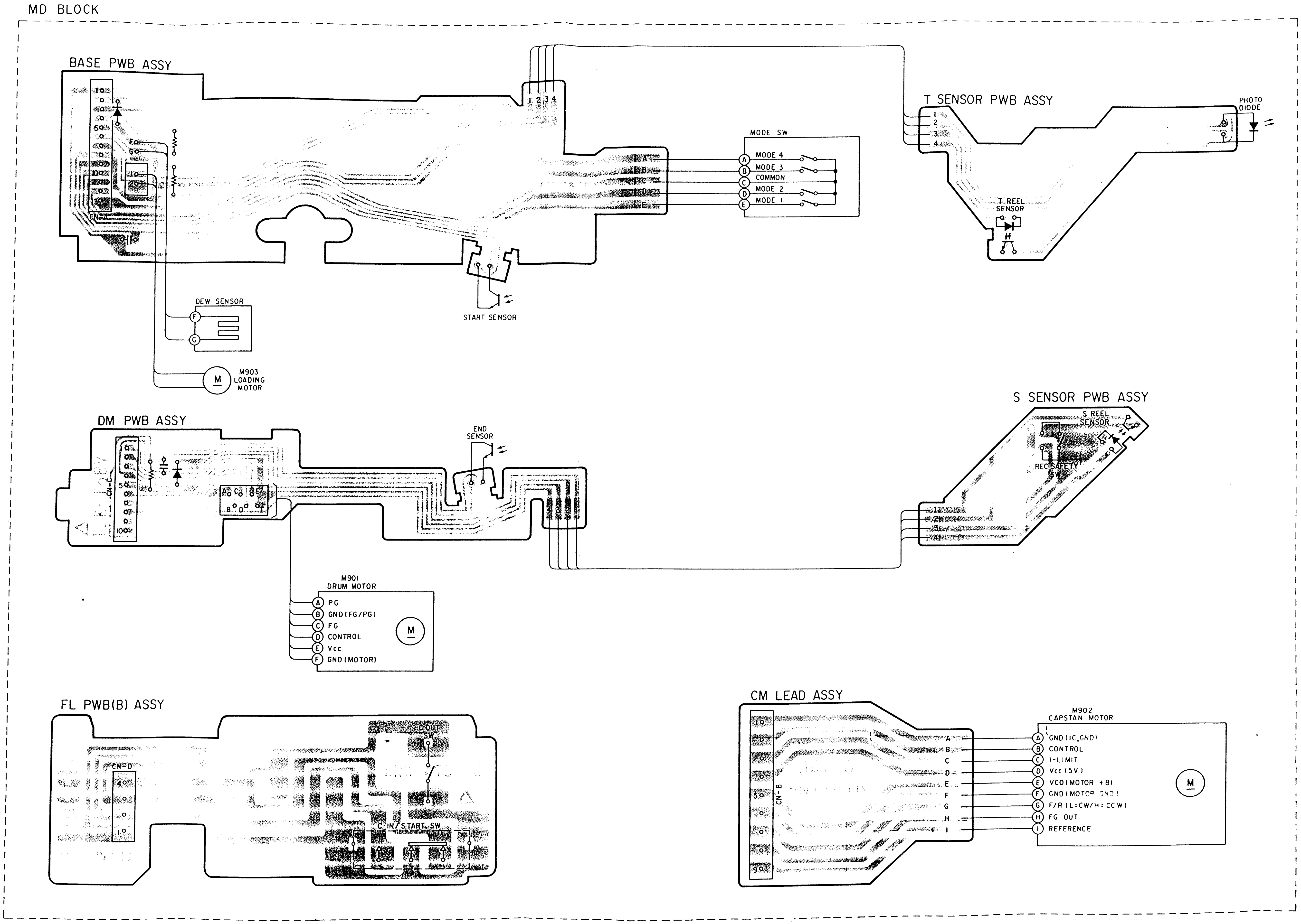

KMI 0
KMI 1
KMI 2
KMI 3
KMO 4
KMO 5
KMO 6
KMO 7
1
2
3
4
5
6
7
8
SW BLOCK
BLOCK


SSIS
ND
B TO B
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
1
2
3
4
5
6
7
8
DMS
TO DMS

MF-154 BOARD

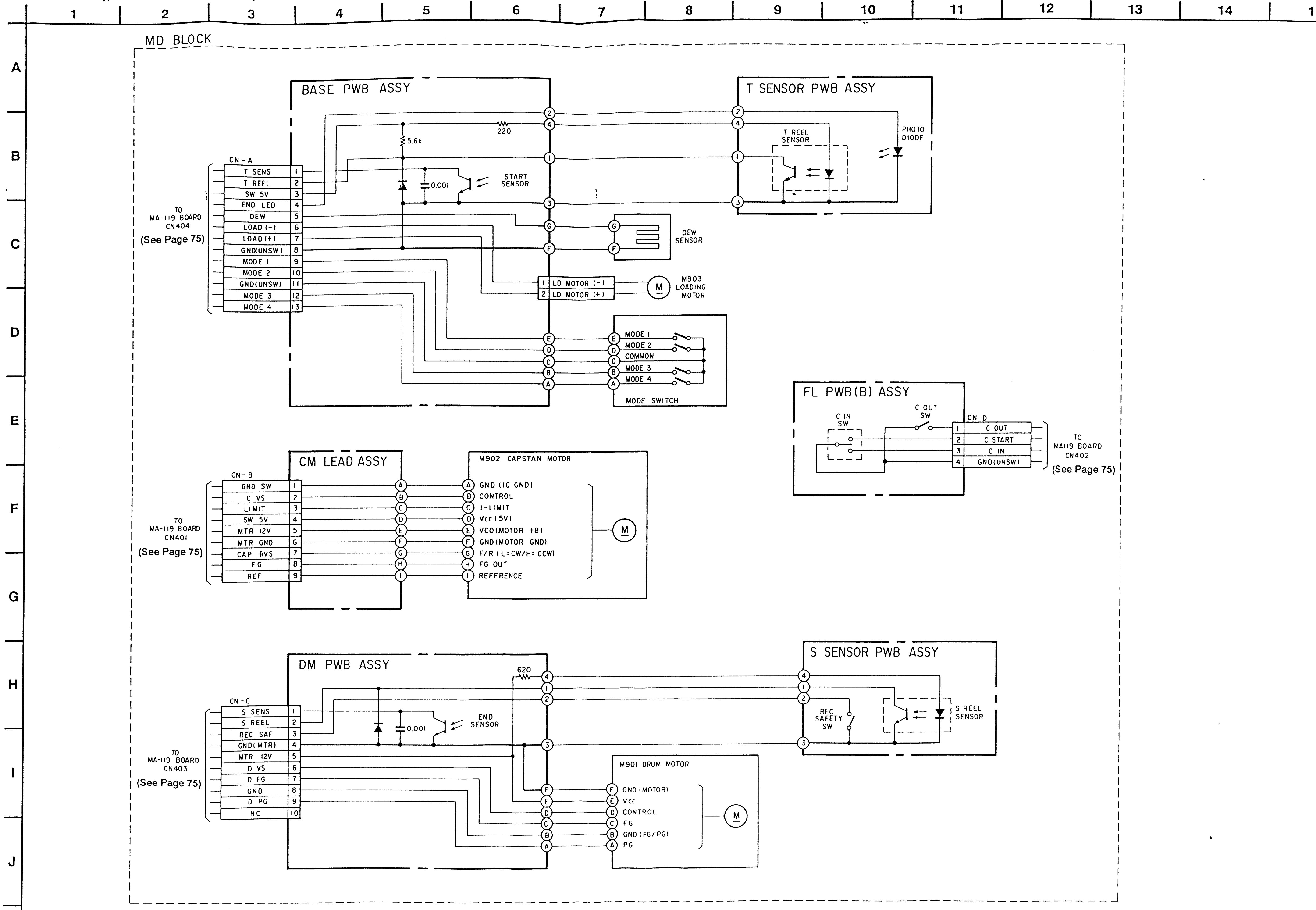

❶
2.7Vp-p
32.768KHz
IC001 ㉛ E-E
❷
4.7Vp-p
4.19MHz
IC001 (74) E-E

MD BLOCK : BASE PWB ASSY (START SENSOR), CM LEAD ASSY (CAPSTAN MOTOR RELAY), DM PWB ASSY (END SENSOR), FL PWB ASSY (CASSETTE IN/OUT/START SW), S SENSOR PWB ASSY (S REEL SENSOR, REC SAFETY SW), T SENSOR PWB ASSY (T REEL SENSOR, END LED) PRINTED WIRING BOARDS


MD BLOCK
BASE PWB ASSY
CN-A
1
5
10
13
E
G
1
2
1 2 3 4
MODE SW
A
B
C
D
E
MODE 4
MODE 3
COMMON
MODE 2
MODE 1
START SENSOR
DEW SENSOR
F
G
M
M903
LOADING
MOTOR
T SENSOR PWB ASSY
1
2
3
4
PHOTO
DIODE
T REEL
SENSOR
S SENSOR PWB ASSY
S REEL
SENSOR
REC SAFETY
SW
1
2
3
4
DM PWB ASSY
CN-C
1
5
10
A
B
C
D
E
F
END
SENSOR
M901
DRUM MOTOR
A
PG
B
GND (FG/PG)
C
FG
D
CONTROL
E
Vcc
F
GND (MOTOR)
M
FL PWB(B) ASSY
CN-D
1
4
C OUT
SW
C IN/START SW
CM LEAD ASSY
CN-B
1
5
9
A
B
C
D
E
F
G
H
I
M902
CAPSTAN MOTOR
A
GND (IC,GND)
B
CONTROL
C
I-LIMIT
D
Vcc (5V)
E
VCO (MOTOR +B)
F
GND (MOTOR GND)
G
F/R (L:CW/H:CCW)
H
FG OUT
I
REFERENCE
M

09

MD BLOCK : BASE PWB ASSY (START SENSOR), CM LEAD ASSY (CAPSTAN MOTOR RELAY), DM PWB ASSY (END SENSOR), FL PWB ASSY (CASSETTE IN/OUT/START SW), S SENSOR PWB ASSY (S REEL SENSOR, REC SAFETY SW), T SENSOR PWB ASSY (T REEL SENSOR, END LED) SCHEMATIC DIAGRAMS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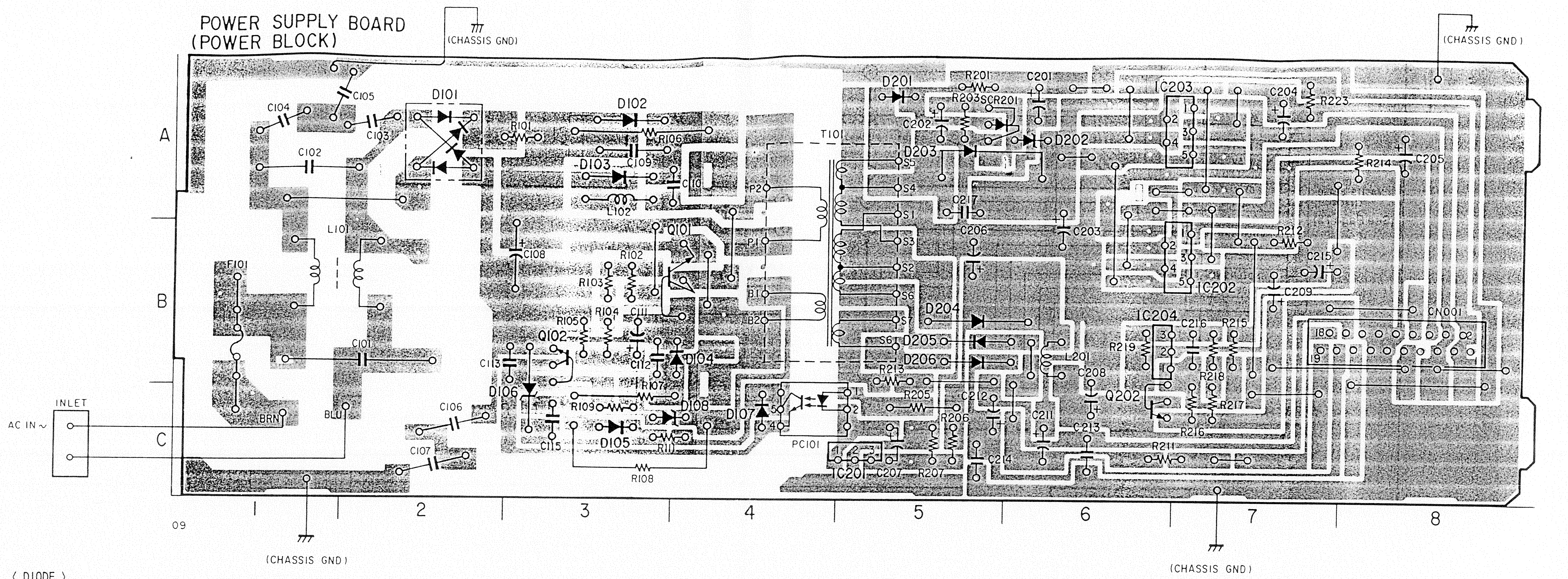
11
12
13
14
A
B
C
D
E
F
G
H
I
J
MD BLOCK
BASE PWB ASSY
CN-A
1 T SENS
2 T REEL
3 SW 5V
4 END LED
5 DEW
6 LOAD (-)
7 LOAD (+)
8 GND(UNSW)
9 MODE 1
10 MODE 2
11 GND(UNSW)
12 MODE 3
13 MODE 4
TO MA-119 BOARD CN404
(See Page 75)
5.6k
220
0.001
START SENSOR
T SENSOR PWB ASSY
T REEL SENSOR
PHOTO DIODE
DEW SENSOR
1 LD MOTOR (-)
2 LD MOTOR (+)
M903 LOADING MOTOR
M
MODE 1
MODE 2
COMMON
MODE 3
MODE 4
MODE SWITCH
FL PWB(B) ASSY
C IN SW
C OUT SW
CN-D
1 C OUT
2 C START
3 C IN
4 GND(UNSW)
TO MA119 BOARD CN402
(See Page 75)
CM LEAD ASSY
CN-B
1 GND SW
2 C VS
3 LIMIT
4 SW 5V
5 MTR 12V
6 MTR GND
7 CAP RVS
8 FG
9 REF
TO MA-119 BOARD CN401
(See Page 75)
M902 CAPSTAN MOTOR
A GND (IC GND)
B CONTROL
C I-LIMIT
D Vcc (5V)
E VCO(MOTOR +B)
F GND(MOTOR GND)
G F/R (L:CW/H:CCW)
H FG OUT
I REFFRENCE
DM PWB ASSY
620
0.001
END SENSOR
CN-C
1 S SENS
2 S REEL
3 REC SAF
4 GND(MTR)
5 MTR 12V
6 D VS
7 D FG
8 GND
9 D PG
10 NC
TO MA-119 BOARD CN403
(See Page 75)
S SENSOR PWB ASSY
REC SAFETY SW
S REEL SENSOR
M901 DRUM MOTOR
F GND (MOTOR)
E Vcc
D CONTROL
C FG
B GND (FG/PG)
A PG

POWER SUPPLY (PS/DH/ME Model) PRINTED WIRING BOARD

— Ref. No. POWER SUPPLY: 6000 series —

POWER SUPPLY

D101	A-2
D102	A-3
D103	A-3
D104	B-4
D105	C-3
D106	C-3
D107	C-4
D108	C-4
D201	A-5
D202	A-6
D203	A-5
D204	B-5
D205	B-5
D206	B-5
IC201	C-5
IC202	B-7
IC203	A-7
IC204	B-6
PC101	C-4
SCR201	A-5
Q101	B-4
Q102	B-3
Q202	C-6


POWER SUPPLY BOARD
(POWER BLOCK)
(CHASSIS GND)
(CHASSIS GND)
(CHASSIS GND)
(CHASSIS GND)
A
B
C
1
2
3
4
5
6
7
8
09
INLET
AC IN ~
BRN
BLU
F101
L101
C101
C102
C103
C104
C105
C106
C107
C108
C109
C110
C111
C112
C113
C115
D101
D102
D103
D104
D105
D106
D107
D108
R101
R102
R103
R104
R105
R106
R107
R108
R109
R111
L102
Q101
Q102
T101
P1
P2
B1
B2
S1
S2
S3
S4
S5
S6
PC101
IC201
D201
D202
D203
D204
D205
D206
SCR201
R201
R203
R205
R206
R207
R211
R212
R213
R214
R215
R216
R217
R218
R219
R223
C201
C202
C203
C204
C205
C206
C207
C208
C209
C211
C212
C213
C214
C215
C216
C217
IC202
IC203
IC204
Q202
L201
CN001
18
19
1
2

(DIODE)

⚠D101	8-719-510-06	DIODE	S1WB60
⚠D102	8-902-095-01	DIODE	ERA15-06
⚠D103	9-902-489-01	DIODE	EG01C
D104	9-900-535-01	DIODE	AU02Z
D105	9-900-535-01	DIODE	AU02Z
D106	8-719-175-88	DIODE	RD7.5F-B3
D107	9-902-552-01	DIODE	MA165
D108	8-719-109-63	DIODE	RD3.0ES-B2
⚠D201	9-900-535-01	DIODE	AU02Z
D202	8-719-114-88	DIODE	RD18JS-B3
⚠D203	8-719-230-02	DIODE	30DF2
⚠D204	8-719-982-04	DIODE	ERB81-004
⚠D205	9-900-535-01	DIODE	AU02Z
⚠D206	9-900-535-01	DIODE	AU02Z

(IC)

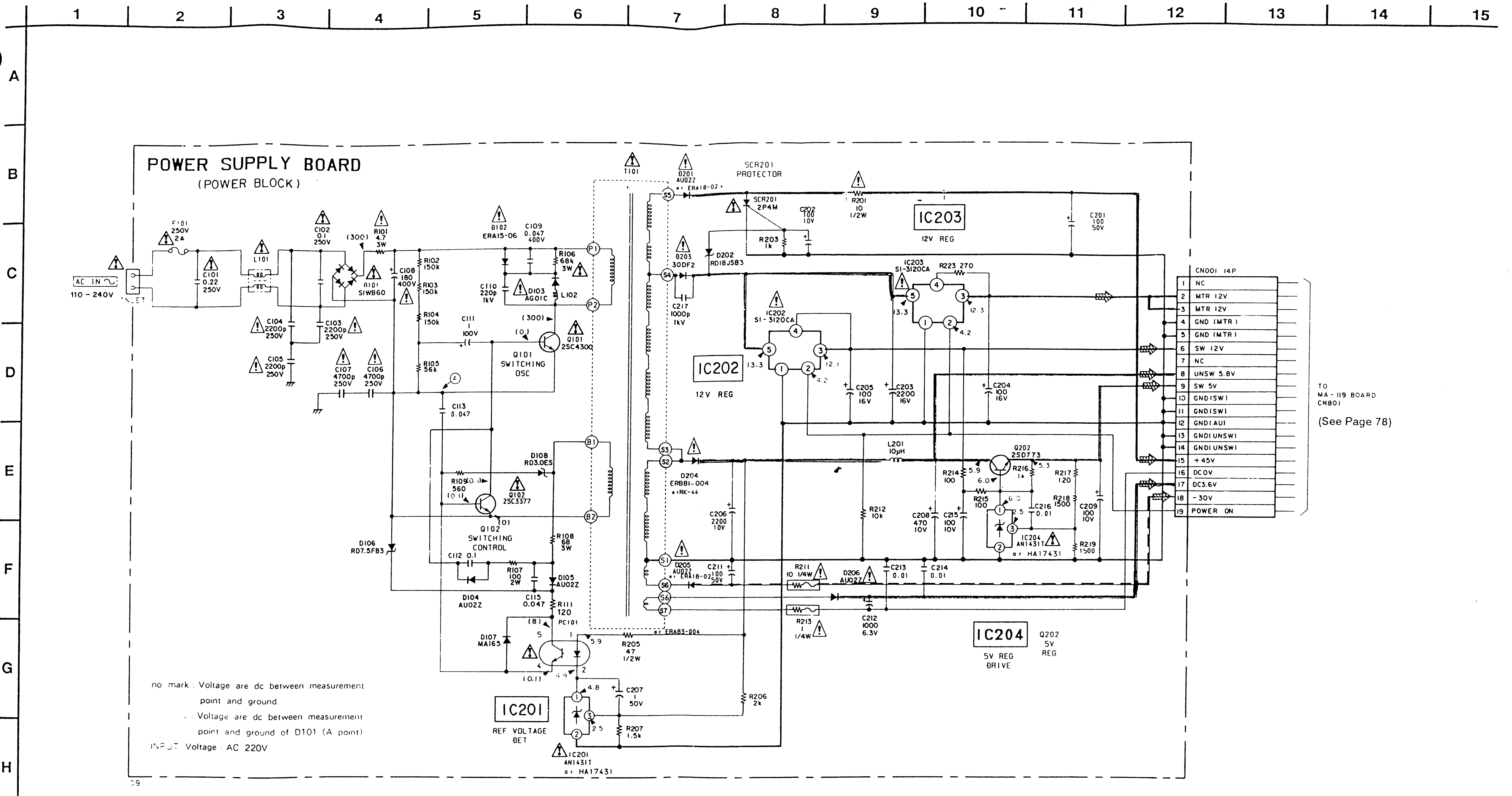
⚠IC201	8-759-420-19	IC	AN1431T
⚠IC202	8-749-921-99	IC	SI-3120CA
⚠IC203	8-749-921-99	IC	SI-3120CA
⚠IC204	8-759-420-19	IC	AN1431T

(TRANSISTOR)

⚠Q101	9-902-496-11	TRANSISTOR	2SC4300
⚠Q102	9-900-519-01	TRANSISTOR	2SC3377
Q202	8-729-140-98	TRANSISTOR	2SD773-5

POWER SUPPLY (PS/DH/ME Model) SCHEMATIC DIAGRAM

— Ref. No. POWER SUPPLY: 6000 series —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12
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14
15
A
B
C
D
E
F
G
H
I
J
POWER SUPPLY BOARD
(POWER BLOCK)
AC IN
110 - 240V
INLET
F101 250V 2A
C101 0.22 250V
L101
C102 0.1 250V
(300)
R101 4.7 3W
D101 S1WB60
C104 2200p 250V
C103 2200p 250V
C105 2200p 250V
C107 4700p 250V
C106 4700p 250V
C108 180 400V
R102 150k
R103 150k
R104 150k
R105 56k
D102 ERA15-06
C109 0.047 400V
C110 220p 1kV
D103 AG01C
R106 68k 3W
L102
C111 1 100V
(300)
(0)
Q101 2SC4300
Q101 SWITCHING OSC
C113 0.047
D108 RD3.0ES
R109 560
Q102 2SC3377
Q102 SWITCHING CONTROL
D106 RD7.5FB3
C112 0.1
R107 100 2W
C115 0.047
D105 AU02Z
D104 AU02Z
R108 68 3W
R111 120
D107 MA165
PC101
(8)
5
1
4
2
5.9
4.9
(0.1)
R205 47 1/2W
C207 1 50V
4.8
2.5
R206 2k
R207 1.5k
IC201 REF VOLTAGE DET
IC201 AN1431T or HA17431
T101
P1
P2
B1
B2
S1
S2
S3
S4
S5
S6
S7
D201 AU02Z or ERA18-02
SCR201 PROTECTOR
SCR201 2P4M
C202 100 10V
R201 10 1/2W
R203 1k
D203 30DF2
D202 RD18JSB3
C217 1000p 1kV
IC203 12V REG
C201 100 50V
IC203 SI-3120CA
R223 270
13.3
12.3
4.2
IC202 SI-3120CA
IC202 12V REG
13.3
12.1
4.2
C205 100 16V
C203 2200 16V
C204 100 16V
D204 ERB81-004 or RK-44
L201 10μH
Q202 2SD773
R214 100
5.9
6.0
R216 1k
5.3
R217 120
R215 100
R218 1500
C216 0.01
C209 100 10V
IC204 AN1431T or HA17431
R219 1500
R212 10k
C206 2200 10V
C208 470 10V
C215 100 10V
D205 AU02Z or ERA18-02
C211 100 50V
R211 10 1/4W
D206 AU02Z
C213 0.01
C214 0.01
R213 1 1/4W
C212 1000 6.3V
or ERA83-004
IC204 5V REG DRIVE
Q202 5V REG
CN001 14P
1 NC
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 NC
8 UNSW 5.8V
9 SW 5V
10 GND(SW)
11 GND(SW)
12 GND(AU)
13 GND(UNSW)
14 GND(UNSW)
15 +45V
16 DC0V
17 DC3.6V
18 -30V
19 POWER ON
TO MA-119 BOARD CN801
(See Page 78)

no mark : Voltage are dc between measurement point and ground.

( ) : Voltage are dc between measurement point and ground of D101 (A point)

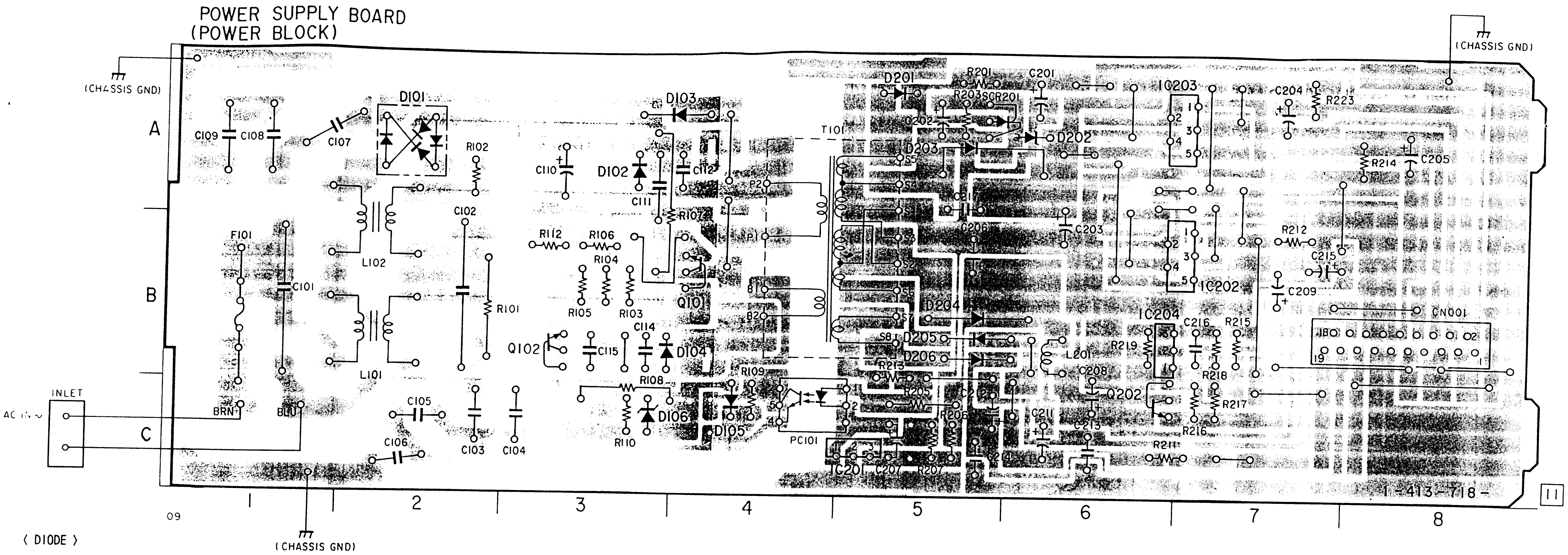
INPUT Voltage : AC 220V

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.

POWER SUPPLY (EE Model) PRINTED WIRING BOARD

— Ref. No. POWER SUPPLY: 7000 series —

POWER SUPPLY	
D101	A-2
D102	A-3
D103	A-3
D104	B-4
D105	C-3
D106	C-3
D107	C-4
D108	C-4
D201	A-5
D202	A-6
D203	A-5
D204	B-5
D205	B-5
D206	B-5
IC201	C-5
IC202	B-7
IC203	A-7
IC204	B-6
PC101	C-4
SCR201	A-5
Q101	B-4
Q102	B-3
Q202	C-6


POWER SUPPLY BOARD
(POWER BLOCK)
(CHASSIS GND)
(CHASSIS GND)
(CHASSIS GND)
A
B
C
INLET
AC IN ~
BRN
BLU
F101
C101
C109
C108
C107
D101
R102
L102
L101
C102
R101
C105
C106
C103
C104
C110
D102
D103
C111
C112
R107
R112
R106
R104
R105
R103
Q101
Q102
C115
C114
D104
R108
R109
D106
D105
R110
PC101
T101
P2
P1
B1
B2
S1
S2
S3
S4
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S6
S7
S8
D201
R201
R203
SCR201
C201
C202
D203
D202
C206
C203
IC203
C204
R223
R214
C205
R212
C215
C209
IC202
IC204
C216
R215
R219
CN001
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D205
D206
R213
L201
C208
Q202
R218
R217
R205
R206
C211
C213
R216
R211
C201
C207
R207
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(DIODE)

⚠D101	8-719-510-06	DIODE S1WB60
⚠D102	9-902-094-01	DIODE AM01A
D103	9-902-489-01	DIODE EG01C
D104	8-719-200-82	DIODE 11ES2
D105	9-902-552-01	DIODE MA165
D106	8-719-109-63	DIODE RD3.0ES-B2
⚠D201	9-900-535-01	DIODE AU02Z
D202	8-719-114-87	DIODE RD18JS-B2
⚠D203	8-719-230-02	DIODE 30DF2
⚠D204	8-719-982-04	DIODE ERB81-004
⚠D205	9-900-535-01	DIODE AU02Z
⚠D206	9-900-535-01	DIODE AU02Z

(IC)

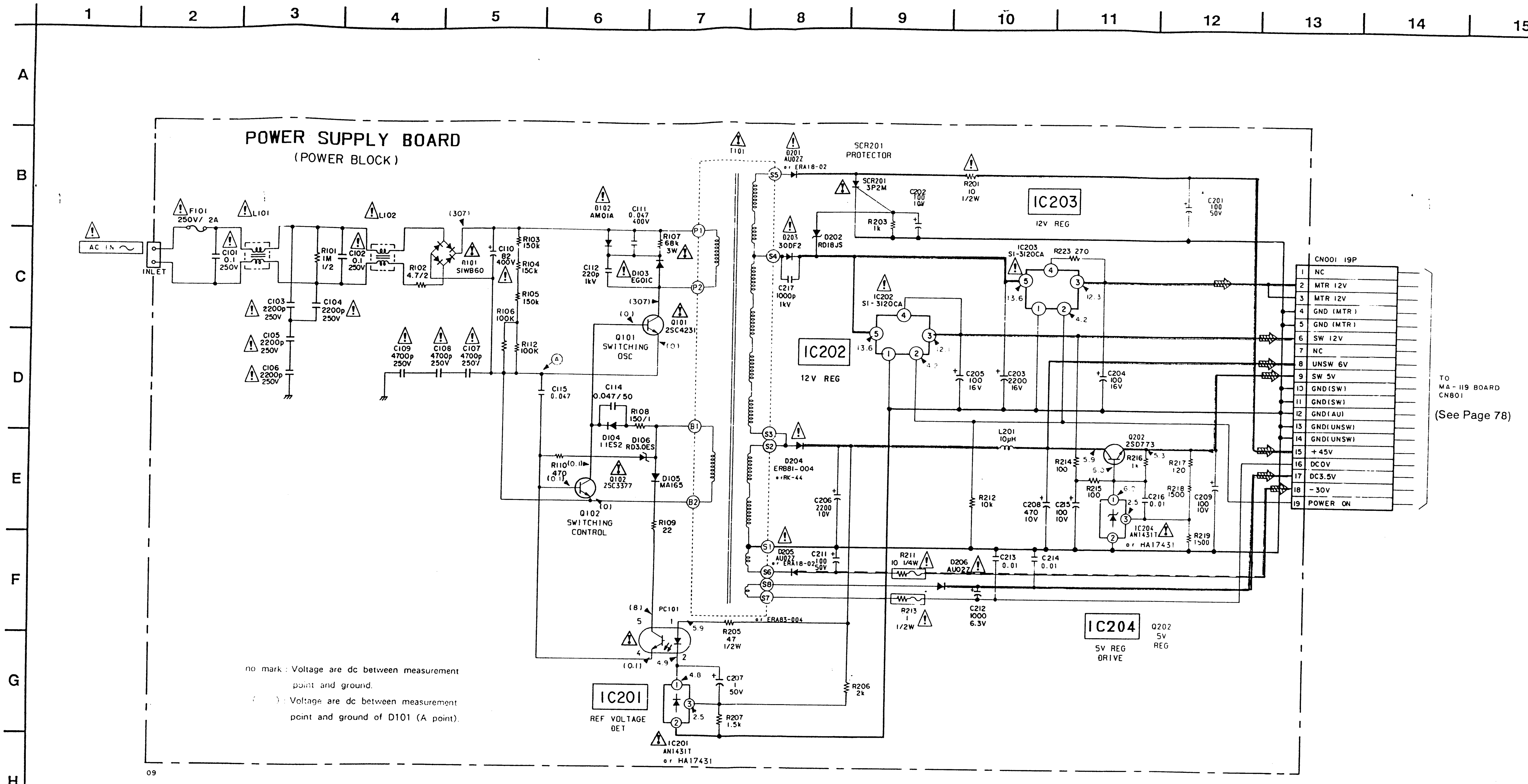
⚠IC201	8-759-420-19	IC AN1431T
⚠IC202	8-749-921-99	IC SI-3120CA
⚠IC203	8-749-921-99	IC SI-3120CA
⚠IC204	8-759-420-19	IC AN1431T

(TRANSISTOR)

⚠Q101	9-902-497-11	TRANSISTOR	2SC4231
⚠Q102	9-900-517-01	TRANSISTOR	2SC3377
Q202	8-729-140-98	TRANSISTOR	2SD773-5

POWER SUPPLY (EE Model) SCHEMATIC DIAGRAM

— Ref. No. POWER SUPPLY: 7000 series —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12
13
14
15
A
B
C
D
E
F
G
H
I
J
POWER SUPPLY BOARD
(POWER BLOCK)
AC IN ~
INLET
F101 250V/ 2A
L101
C101 0.1 250V
R101 1M 1/2
C102 0.1 250V
L102
R102 4.7/2
D101 S1WB60
C103 2200p 250V
C104 2200p 250V
C105 2200p 250V
C106 2200p 250V
C109 4700p 250V
C108 4700p 250V
C107 4700p 250V
C110 82 400V
R103 150k
R104 150k
R105 150k
R106 100K
R112 100K
(307)
D102 AM01A
C111 0.047 400V
R107 68k 3W
C112 220p 1kV
D103 EG01C
Q101 2SC4231
Q101 SWITCHING OSC
C115 0.047
C114 0.047/50
R108 150/1
D104 11ES2
D106 RD3.0ES
R110 470
Q102 2SC3377
Q102 SWITCHING CONTROL
D105 MA165
R109 22
PC101
IC201 REF VOLTAGE DET
IC201 AN1431T or HA17431
C207 1 50V
R207 1.5k
R205 47 1/2W
R206 2k
T101
D201 AU02Z or ERA18-02
SCR201 PROTECTOR
SCR201 3P2M
C202 100 10V
R203 1k
R201 10 1/2W
IC203 12V REG
IC203 S1-3120CA
R223 270
C201 100 50V
D203 30DF2
D202 RD18JS
C217 1000p 1kV
IC202 S1-3120CA
IC202 12V REG
C205 100 16V
C203 2200 16V
C204 100 16V
D204 ERB81-004 or RK-44
C206 2200 10V
L201 10μH
Q202 2SD773
R214 100
R216 1k
R217 120
R215 100
R218 1500
C216 0.01
C209 100 10V
R212 10k
C208 470 10V
C215 100 10V
IC204 AN1431T or HA17431
R219 1500
D205 AU02Z or ERA18-02
C211 100 50V
R211 10 1/4W
D206 AU02Z
C213 0.01
C214 0.01
R213 1 1/2W
C212 1000 6.3V
or ERA83-004
IC204 5V REG DRIVE
Q202 5V REG
CN001 19P
1 NC
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 NC
8 UNSW 6V
9 SW 5V
10 GND(SW)
11 GND(SW)
12 GND(AU)
13 GND(UNSW)
14 GND(UNSW)
15 +45V
16 DC0V
17 DC3.5V
18 -30V
19 POWER ON
TO MA-119 BOARD CN801
(See Page 78)
09

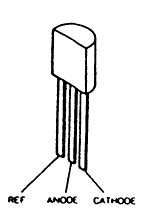
no mark : Voltage are dc between measurement point and ground.

( ) : Voltage are dc between measurement point and ground of D101 (A point).

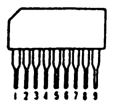
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.

4-3. SEMICONDUCTORS

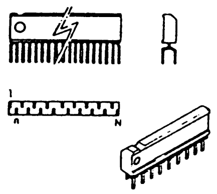
AN1431T


REF
ANODE
CATHODE

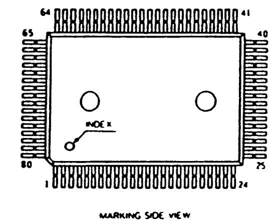
BA7021



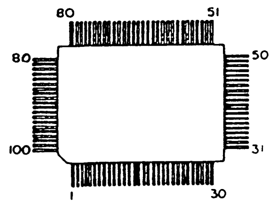
BA7025L



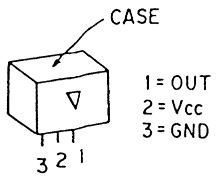
CXP50116-275Q


64
41
65
40
80
25
1
24
INDEX
MARKING SIDE VIEW

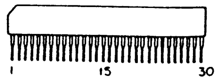
CXP80724-028Q


80
51
81
50
100
31
1
30

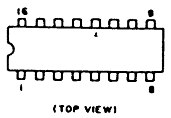
GP1U52X


CASE
1 = OUT
2 = Vcc
3 = GND
3 2 1

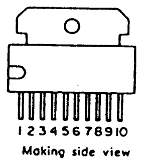
LA7297



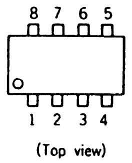
LA7376


16
9
1
8
(TOP VIEW)

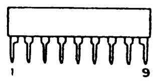
LB1641


1 2 3 4 5 6 7 8 9 10
Making side view

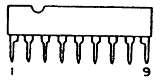
LC8991
RC4556D
TL082CP


8 7 6 5
1 2 3 4
(Top view)

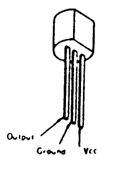
LVA-519S



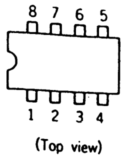
LVA-521S



PST572C
PST572H


Output
Ground
Vcc

ST93C46AB1
µPC358C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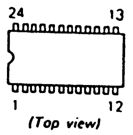
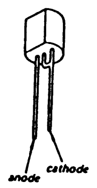
1 2 3 4
(Top view)

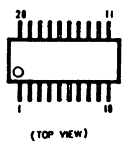
TA8823N


24
13
1
12
(Top view)

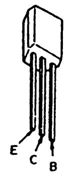
µPC574J


anode
cathode

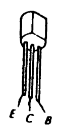
µPD6450GT-606


20
11
1
10
(TOP VIEW)

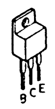
2SA1309A-R
2SC3311A-R
DTC144ES



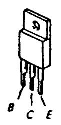
2SA933-Q
2SC3377
2SD773-34



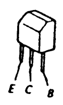
2SC3890



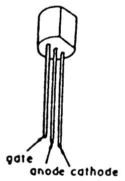
2SD2012



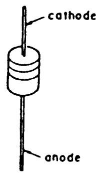
2SD774-34



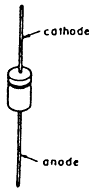
03P2M


gate
anode
cathode

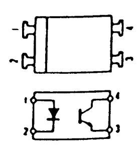
1SS119
11ES2
AU02Z
ERA15-06
MA165
RD18JS-BB
RD6.2ESB2
RD8.2ESB1


cathode
anode

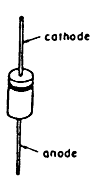
30DF2
AG01A
ERB81-004


cathode
anode

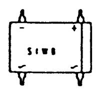
PC817



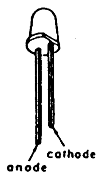
RD5.1EL2


cathode
anode

S1WB60



SEL2510C-D

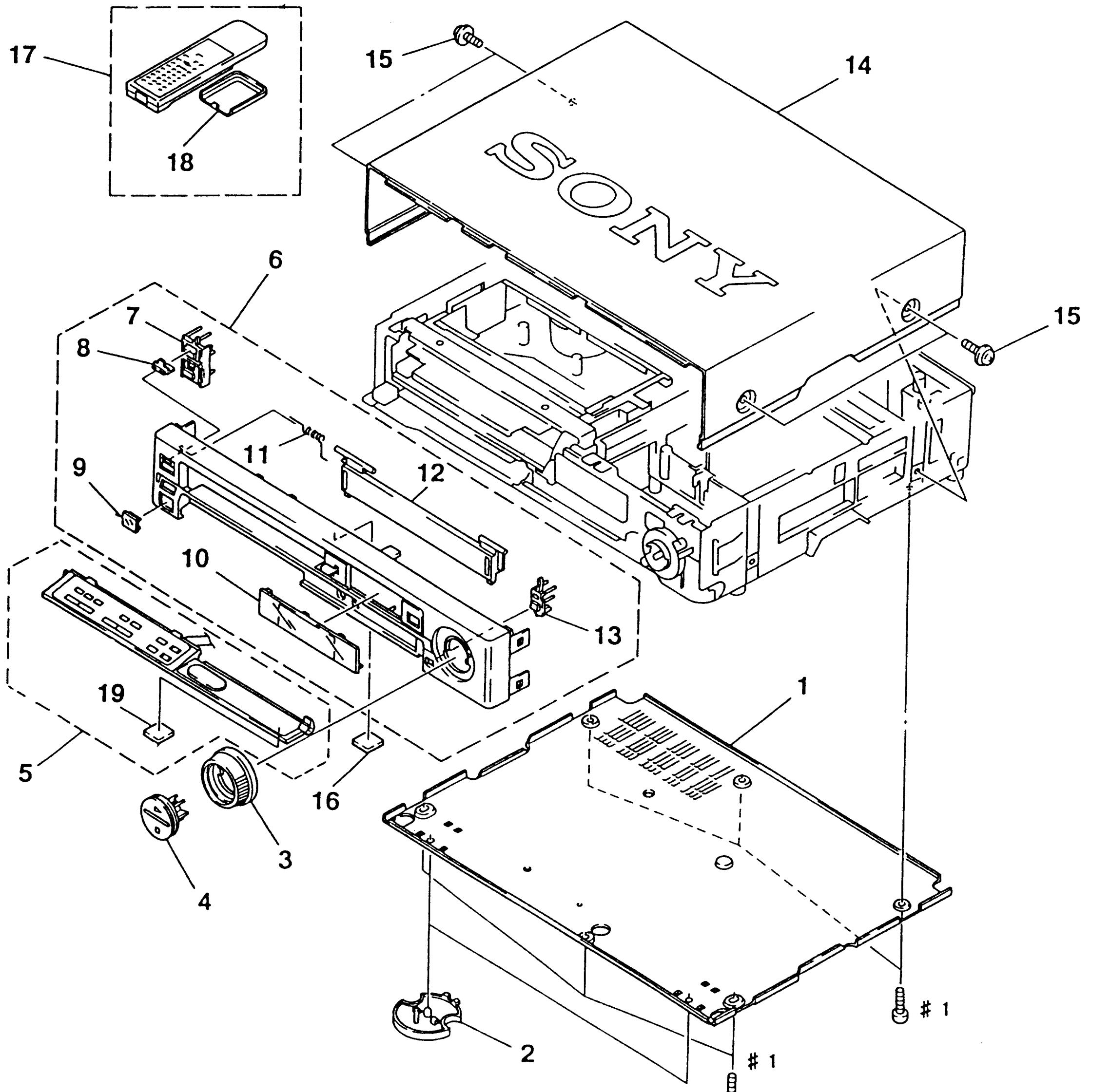

anode
cathode

SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- East European model is abbreviated as EE, and also Chinese model is DH, E model is PS.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. FRONT PANEL AND CABINET ASSEMBLIES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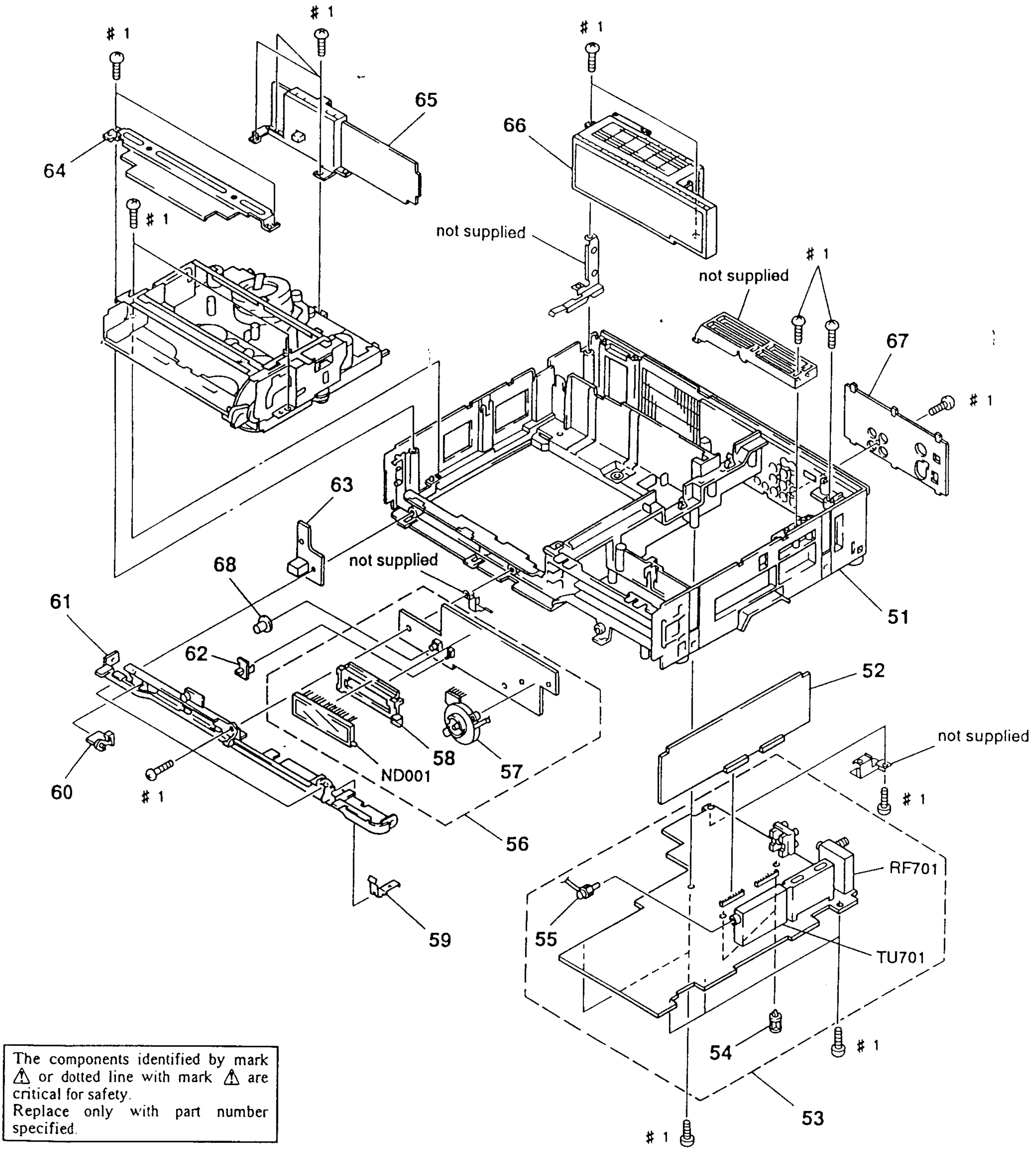
# 1
# 1

Ref. No.	Part No.	Description	Remark
* 1	3-946-615-01	PLATE, BOTTOM	
2	3-946-783-01	INSULATOR (DIA. 58X5)	
3	3-944-572-11	RING, SHUTTLE	
4	X-3941-388-1	BUTTON ASSY, FUNCTION	
5	1-466-691-21	SWITCH BLOCK, CONTROL (PS/ME MODEL)	
5	1-466-691-61	SWITCH BLOCK, CONTROL (EE MODEL)	
5	1-466-691-71	SWITCH BLOCK, CONTROL (DH MODEL)	
6	X-3941-426-1	PANEL ASSY, FRONT (PS/ME MODEL)	
6	X-3941-428-1	PANEL ASSY, FRONT (DH MODEL)	
6	X-3941-542-1	PANEL ASSY, FRONT (EE MODEL)	
7	3-946-612-01	BUTTON, POWER-EJECT	
8	3-946-611-01	TIP, POWER BUTTON	
9	3-946-620-01	FILTER, REMOTE CONTROL	
10	3-946-618-01	PLATE, TRANSPARENT (EXCEPT EE MODEL)	
10	3-946-618-11	PLATE, TRANSPARENT (EE MODEL)	
11	3-946-614-01	SPRING, FL	
12	3-946-613-01	DOOR, CASSETTE	
13	3-946-616-01	BUTTON, PAUSE	
14	3-946-622-01	COVER, UPPER	
15	3-710-901-11	SCREW, TAPPING	
16	9-911-841-XX	CUSHION (B)	
17	1-693-034-21	REMOTE COMMANDER (RMT-V115A)	
18	4-394-031-01	COVER, BATTERY	
* 19	3-703-713-41	STICKER, SONY SYMBOL (10) (EE MODEL)	

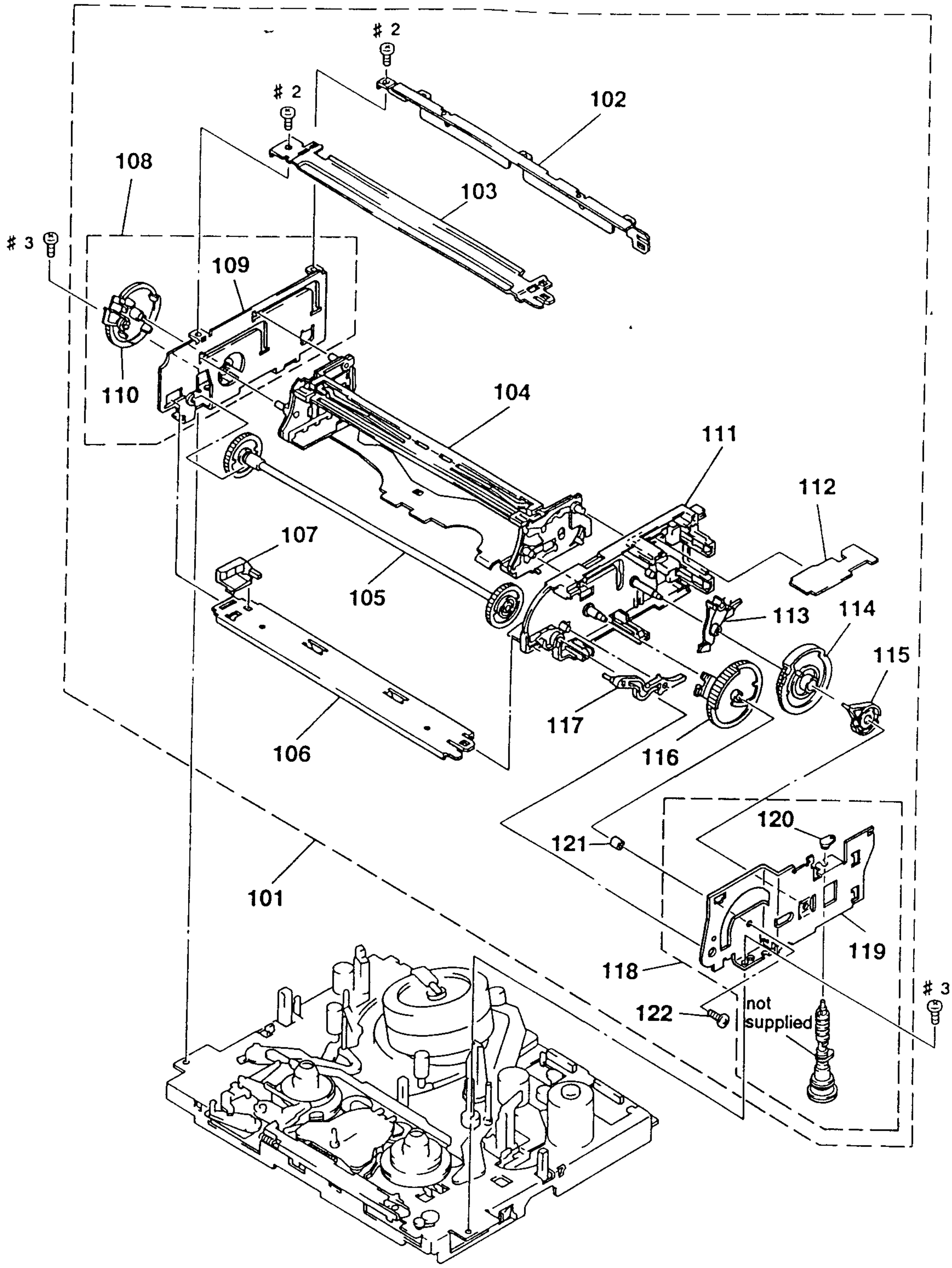
5-2. MAIN BOARDS ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	3-946-628-01	CHASSIS, D-MOLD	
* 52	A-6727-430-A	YC-120 BOARD, COMPLETE	
* 53	A-6756-489-A	MA-119 BOARD, COMPLETE (DH MODEL)	
* 53	A-6756-491-A	MA-119 BOARD, COMPLETE (EXCEPT DH MODEL)	
54	3-682-057-11	SPACER (SMALL)	
55	1-555-110-00	CABLE, PIN	
* 56	A-6721-468-A	MF-154 BOARD, COMPLETE (DH MODEL)	
* 56	A-6721-470-A	MF-154 BOARD, COMPLETE (EXCEPT DH MODEL)	
57	1-572-662-11	SWITCH, ROTARY	
* 58	1-572-662-11	HOLDER, FL	
59	3-946-637-01	SPRING, DOOR LOCK	
60	3-946-630-01	PLATE (LEFT), FULCRUM, DOOR	
61	3-946-624-01	ESCUTCHEON, FRAME	
62	3-744-217-01	KNOB, SELECTION	
* 63	A-6756-376-A	MF-155 BOARD, COMPLETE	
* 64	3-946-636-01	STAY, FL	
* 65	A-6727-428-A	RP-139 BOARD, COMPLETE	
⚠66	1-413-718-11	POWER BLOCK (EE MODEL)	
⚠66	1-413-719-11	POWER BLOCK (EXCEPT EE MODEL)	
* 67	3-946-623-22	PLATE, JACK, REAR (PS MODEL)	
* 67	3-946-623-31	PLATE, JACK, REAR (ME1 MODEL)	
* 67	3-946-623-61	PLATE, JACK, REAR (DH MODEL)	
* 67	3-946-623-91	PLATE, JACK, REAR (EE MODEL)	
* 67	3-947-098-01	PLATE, JACK, REAR (ME2 MODEL)	
68	3-947-815-01	KNOB, VOLUME	
ND001	1-519-723-11	INDICATOR TUBE, FLUORESCENT	
⚠RF701	1-466-350-11	MODULATOR, RF (RFU-2018) (EXCEPT DH MODEL)	
⚠RF701	1-466-349-11	MODULATOR, RF (RFU-2019) (DH MODEL)	
⚠TU701	1-465-898-11	TUNER, VIF (BTF-3G501) (EXCEPT DH MODEL)	
⚠TU701	1-465-896-11	TUNER, VIF (BTF-3G502) (DH MODEL)	

5-3. FL CASSETTE COMPARTMENT ASSEMBLY



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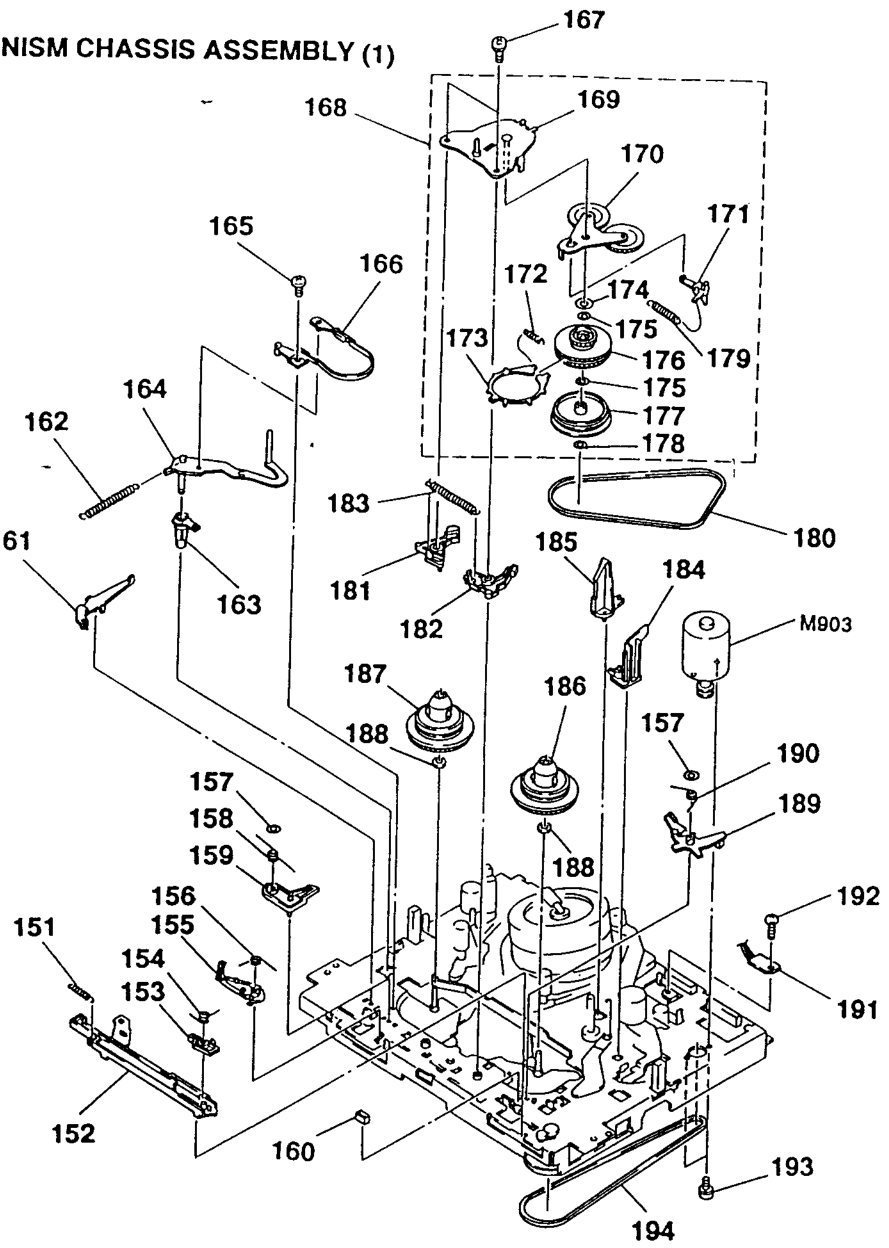
not supplied

Ref. No.	Part No.	Description	Remark
101	3-946-965-01	FL ASSY	
102	3-947-008-01	ANGLE, REAR	
103	3-946-995-01	PLATE, UPPER	
104	3-946-979-01	HOLDER ASSY, CASSETTE	
105	3-946-983-01	GEAR ASSY, SYNCHRO	
106	3-946-993-01	ANGLE, FRONT	
107	3-946-994-01	GUIDE (L), CASSETTE	
108	3-946-978-01	FRAME (L) ASSY	
109	3-947-009-01	RIVETING, FRAME (L)	
110	3-947-010-01	GEAR (L) ASSY, LIFT	
111	3-947-011-01	FRAME (R)	
112	3-946-992-01	PWB (B) ASSY, FL	
113	3-946-991-01	LEVER ASSY, SWITCH	
114	3-946-980-01	WHEEL ASSY, WORM	
115	3-946-981-01	ARM ASSY, SWITCH	
116	3-946-982-01	GEAR (R) ASSY, LIFT	
117	3-947-012-01	LEVER ASSY, LIFT	
118	3-946-990-01	COVER ASSY, FRAME	
119	3-947-013-01	COVER, FRAME	
120	3-947-020-01	BEARING (A), F WORM	
121	3-948-705-01	COLLAR	
122	3-948-706-01	SCREW (3X6)	

5-4. MECHANISM CHASSIS ASSEMBLY (1)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M903
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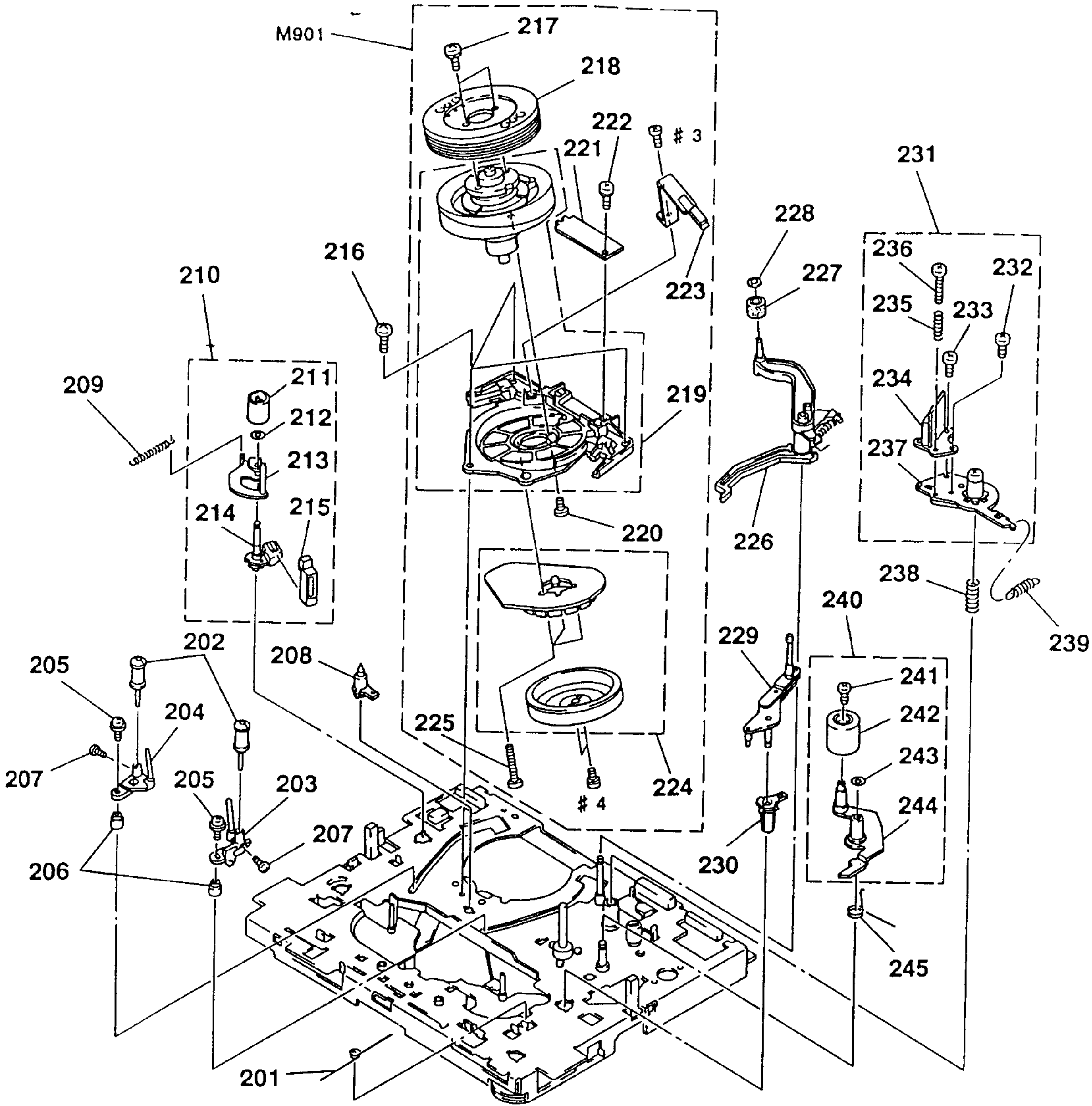
194

Ref. No.	Part No.	Description	Remark
151	3-947-015-01	SPRING, BK SLIDE	
152	3-947-001-01	PLATE, SLIDE, BK	
153	3-947-014-01	HOOK, BK TRIGGER	
154	3-947-016-01	SPRING, TRIGGER HOOK	
155	3-946-959-01	ARM, REC	
156	3-946-947-01	SPRING, REC ARM	
157	3-946-916-01	CUT (3X6X0.5), HLW	
158	3-946-915-01	SPRING, SS ARM	
159	3-946-914-01	ARM, SS BRAKE	
160	3-947-067-01	RUBBER, DAMPER	
161	3-946-946-01	ARM, REC SWITCH	
162	3-946-937-01	SPRING, BT	
163	3-946-936-01	METAL, BT ARM	
164	3-946-934-01	ARM ASSY, TENSION	
165	3-946-966-01	SCREW (2.6X5), +C TIGHT	
166	3-946-935-01	BAND ASSY, BT	
167	3-947-000-01	SCREW (2X4), +	
168	3-946-969-01	PLATE ASSY, SUB	
169	3-946-971-01	RIVETING, SUB PLATE	
170	3-946-988-01	PLATE ASSY, GEAR	
171	3-946-987-01	ARM, CENTER RING	
172	3-946-986-01	SPRING, CHANGE RING	
173	3-946-985-01	RING, CHANGE	
174	3-946-989-01	HL (W) (C) (6.4X9X0.3)	
175	3-946-997-01	HL (W) (2.5X4.5X0.25)	
176	3-946-970-01	CLUTCH ASSY	
177	3-946-984-01	PULLEY ASSY, CLUTCH	
178	3-946-996-01	CUT (2.1X5X0.3), P.W.	
179	3-947-998-01	SPRING, CENTER RING ARM	
180	3-946-999-01	BELT, DRIVE	
181	3-947-017-01	ARM (L) ASSY, BRAKE	
182	3-947-018-01	ARM (R) ASSY, BRAKE	
183	3-947-019-01	SPRING, BRAKE ARM	
184	3-947-069-01	GUIDE BLOCK	
185	3-947-068-01	GUIDE ASSY, TAPE	
186	3-947-002-01	TABLE ASSY, REEL	
187	3-947-997-01	TABLE ASSY, S REEL	
188	3-947-003-01	WASHER (2.5X4.5X0.5)	
189	3-946-912-01	ARM ASSY, TS BRAKE	
190	3-946-913-01	SPRING, TS ARM	
191	3-947-626-01	SENSOR (EYH-S10R)	
192	3-947-996-01	SCREW (1.55X4.5X0.3)	
193	3-946-918-01	SCREW (3X4)	
194	3-946-923-01	BELT, LOADING	
M903	3-946-917-01	MOTOR ASSY, L (LOADING)	

5-5. MECHANISM CHASSIS ASSEMBLY (2)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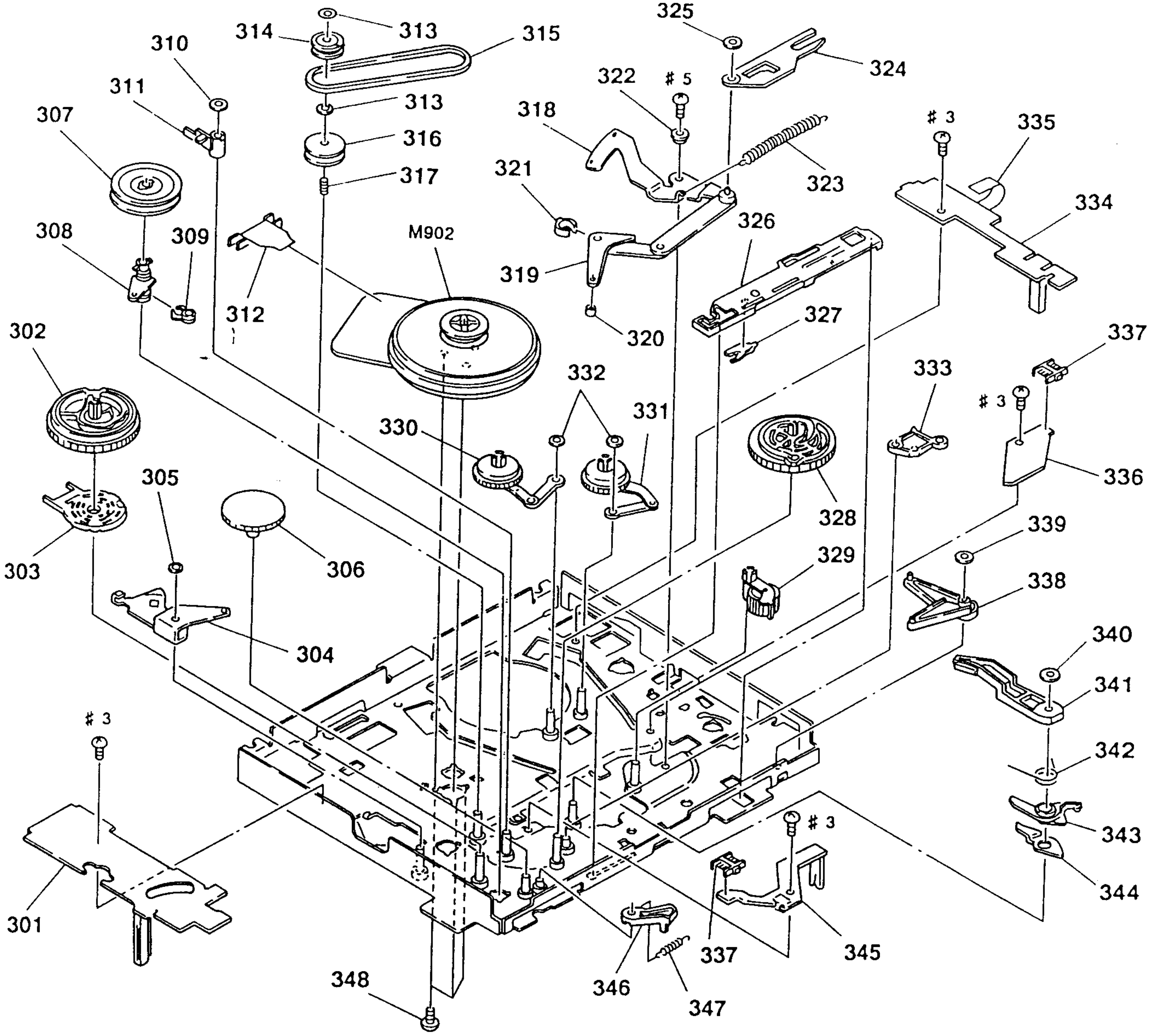
Ref. No.	Part No.	Description	Remark
201	3-947-022-01	SPRING, RG ARM	
202	3-947-073-01	POST, ROLLER	
203	3-947-072-01	L BLOCK (R) ASSY	
204	3-947-071-01	L BLOCK (L) ASSY	
205	3-947-078-01	SCREW (2.6X3), + CUP	
206	3-947-077-01	BOSS, LOADING	
207	3-947-074-01	SCREW (2X2.3)	
208	3-947-070-01	BOSS, CASSETTE GUIDE	
209	3-948-474-01	SPRING, F POST	
210	3-946-972-01	FE (BASE) ASSY	
211	3-946-975-01	ROLLER, IMPEDANCE	
212	3-946-977-01	CUT (1.6X3.8X0.3), W	
213	3-946-976-01	ARM ASSY, F POST	
214	3-946-974-01	SEMI ASSY, FE (BASE)	
215	3-946-973-01	HEAD (HV113001), FE	
216	3-947-066-01	SCREW (3X7), +C TIGHT	
217	3-947-060-01	SCREW (3X8)	
218	3-949-187-01	DRUM (TPB3-011), UPPER	
219	3-947-046-01	CYLINDER (MOUNT)	
220	3-947-061-01	SCREW (2X6), CAMERA B TIGHT	
221	3-947-047-01	PC BOARD ASSY, VIDEO OUT (REC/PB HEAD)	
222	3-947-064-01	SCREW (2.6X6), S TIGHT	
223	3-947-999-01	GROUND ASSY, DRUM	
224	3-947-043-01	MOTOR (E20EL), DRUM	
225	3-947-065-01	SCREW (2.6X16)	
226	3-947-080-01	LEVER ASSY, CLEANING	
227	3-947-624-01	ROLLER, CLEANING	
228	3-947-625-01	CUT(2.1X5X0.3), POLY-SLIDER(W)	
229	3-947-021-01	ARM ASSY, RG	
230	3-946-936-01	METAL, BT ARM	
231	3-947-081-01	AH (BASE) ASSY	
232	3-946-929-01	SCREW (2.6X8), PAN	
233	3-946-930-01	SCREW (2.6X7), + PAN	
234	3-947-082-01	HEAD (HV225127), ACE	
235	3-947-083-01	SP, AZIMUTH	
236	3-946-928-01	SCREW, AZIMUTU SP	
237	3-946-931-01	HOLDER ASSY, AH (BASE)	
238	3-946-933-01	SPRING, AH (BASE)	
239	3-946-932-01	SPRING, X ADJ	
240	3-947-004-01	ARM ASSY, P ROLLER	
241	3-947-007-01	SCREW (2.6X4), + BIND	
242	3-947-005-01	PINCH ROLLER	
243	3-947-024-01	HL (C) (3.5X5.5X0.5)	
244	3-947-006-01	RIVETING, P ROLLER ARM	
245	3-947-025-01	SPRING, P ARM	
M901	3-949-186-01	CYLINDER ASSY (DRUM)	

5-6. MECHANISM CHASSIS ASSEMBLY (3)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Ref. No.	Part No.	Description	Remark
301	3-946-954-01	PWB ASSY, BASE	
302	3-946-924-01	GEAR, P CAM	
303	3-946-958-01	SWITCH, MODE	
304	3-947-026-01	PLATE ASSY	
305	3-947-027-01	CUT (3X6X0.5), POLY-SLIDER (W)	
306	3-946-922-01	GEAR, LOADING	
307	3-946-921-01	PULLEY, LOADING	
308	3-946-919-01	METAL ASSY, L PULLEY	
309	3-946-920-01	ARM ASSY, TRG GEAR	
310	3-946-964-01	CUT (2.1X5X0.5)	
311	3-946-961-01	ARM, BREAKER	
312	3-947-029-01	LEAD ASSY, CM	
313	3-946-963-01	CUT (2.1X4X0.4)	
314	3-946-950-01	PULLEY ASSY, RE	
315	3-946-962-01	BELT, FL	
316	3-946-951-01	PULLEY, EJECT	
317	3-946-960-01	SPRING, BREAKER	
318	3-946-926-01	RIVETING, L JOINT PLATE	
319	3-946-952-01	STOPPER, GEAR PLATE	
320	3-946-941-01	ROLLER, CAM	
321	3-946-945-01	STOPPER, L LEVER	
322	3-946-940-01	COLLAR, L GEAR PLATE	
323	3-946-927-01	SPRING, L GR PLATE	
324	3-946-939-01	PLATE, UP, BT PULL	
325	3-946-967-01	CUT (2.1X4X0.5)	
326	3-946-943-01	PLATE, SLIDE, M	
327	3-946-944-01	LEVER	
328	3-946-925-01	GEAR, L CAM	
329	3-946-998-01	ARM ASSY, RF GEAR	
330	3-947-075-01	GEAR (L) ASSY, T THREADING	
331	3-947-076-01	GEAR (R) ASSY, T THREADING	
332	3-947-079-01	HL (C) (4.7X7X0.5)	
333	3-946-942-01	LEVER, M	
334	3-946-957-01	PWB ASSY, DM	
335	3-946-949-01	LEAD (EPC) (BNCD-6-63), DM	
336	3-946-956-01	PWB ASSY, S SENSOR	
337	3-946-948-01	JOINER (MCN40011), PWB	
339	3-946-938-01	LEVER, BT	
339	3-946-968-01	CUT (3X7.5X0.5), HLW	
340	3-947-035-01	CUT (2.6X6X0.5)	
341	3-947-033-01	LEVER, CB RETURN	
342	3-947-031-01	SPRING, C BRAKE	
343	3-947-032-01	LEVER, C BRAKE	
344	3-947-030-01	ARM ASSY, C BRAKE	
345	3-946-955-01	PWB ASSY, T SENSOR	
346	3-946-910-01	ARM, BK RELEASE	
347	3-946-911-01	SPRING, RESET	
348	3-947-034-01	SCREW (2.6X7), + C TIGHT	
M902	3-947-028-01	MOTOR (F20KB38) (CAPSTAN)	

MA-119

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- East European model is abbreviated as EE, and also Chinese model is DH, E model is PS.

Ref. No.	Part No.	Description				Remark
*	A-6756-489-A	MA-119 BOARD, COMPLETE (DH MODEL)				
		***********************				
*	A-6756-491-A	MA-119 BOARD, COMPLETE (PS/ME/EE MODEL)				
		***********************				
		(Ref. No. 3000 Series)				
	1-555-110-00	CABLE, PIN				
	3-682-057-11	SPACER (SMALL)				
		(CAPACITOR)				
C201	1-136-559-11	FILM	0.0047uF	10%	630V	
C202	1-109-675-11	MICA	120PF	1%	500V	
C203	1-124-477-11	ELECT	47uF	20%	25V	
C204	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C205	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	
C206	1-124-903-11	ELECT	1uF	20%	50V	
C209	1-124-477-11	ELECT	47uF	20%	25V	
C210	1-124-126-00	ELECT	47uF	20%	10V	
C212	1-124-477-11	ELECT	47uF	20%	25V	
C213	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C217	1-124-252-00	ELECT	0.33uF	20%	50V	
C218	1-126-233-11	ELECT	22uF	20%	50V	
C219	1-124-126-00	ELECT	47uF	20%	10V	
C220	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C221	1-124-903-11	ELECT	1uF	20%	50V	
C222	1-124-903-11	ELECT	1uF	20%	50V	
C223	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V	
C224	1-163-002-11	CERAMIC CHIP	270PF	10%	50V	
C225	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C226	1-126-233-11	ELECT	22uF	20%	50V	
C229	1-124-927-11	ELECT	4.7uF	20%	100V	
C301	1-124-126-00	ELECT	47uF	20%	10V	
C302	1-124-126-00	ELECT	47uF	20%	10V	
C303	1-163-111-00	CERAMIC CHIP	56PF	5%	50V	
C304	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C305	1-124-443-00	ELECT	100uF	20%	10V	
C306	1-163-239-11	CERAMIC CHIP	33PF	5%	50V	
C307	1-163-227-11	CERAMIC CHIP	10PF	5%	50V	
C308	1-163-239-11	CERAMIC CHIP	33PF	5%	50V	
C309	1-163-006-11	CERAMIC CHIP	560PF	10%	50V	
C310	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C311	1-124-903-11	ELECT	1uF	20%	50V	
C312	1-130-487-00	MYLAR	0.022uF	5%	50V	
C313	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V	
C314	1-163-127-00	CERAMIC CHIP	270PF	5%	50V	
C317	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C318	1-124-126-00	ELECT	47uF	20%	10V	
C319	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C320	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C321	1-124-126-00	ELECT	47uF	20%	10V	
C401	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C402	1-126-101-11	ELECT	100uF	20%	16V	
C403	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C404	1-163-033-00	CERAMIC CHIP	0.022uF		50V	
C405	1-163-033-00	CERAMIC CHIP	0.022uF		50V	
C406	1-126-101-11	ELECT	100uF	20%	16V	
C407	1-124-907-11	ELECT	10uF	20%	50V	
C410	1-126-233-11	ELECT	22uF	20%	50V	
C411	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C412	1-130-487-00	MYLAR	0.022uF	5%	50V	
C413	1-130-487-00	MYLAR	0.022uF	5%	50V	
C414	1-124-925-11	ELECT	2.2uF	20%	100V	
C415	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C416	1-126-233-11	ELECT	22uF	20%	50V	
C418	1-124-907-11	ELECT	10uF	20%	50V	
C419	1-124-126-00	ELECT	47uF	20%	10V	
C420	1-124-907-11	ELECT	10uF	20%	50V	
C422	1-124-126-00	ELECT	47uF	20%	10V	
C423	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C424	1-163-833-00	CERAMIC CHIP	0.068uF		25V	
C425	1-126-233-11	ELECT	22uF	20%	50V	
C426	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C427	1-124-443-00	ELECT	100uF	20%	10V	
C428	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
C429	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C430	1-124-925-11	ELECT	2.2uF	20%	100V	
C431	1-163-833-00	CERAMIC CHIP	0.068uF		25V	
C432	1-124-927-11	ELECT	4.7uF	20%	100V	
C433	1-124-927-11	ELECT	4.7uF	20%	100V	
C434	1-124-903-11	ELECT	1uF	20%	50V	
C435	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C436	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C437	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	
C439	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C440	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C441	1-124-925-11	ELECT	2.2uF	20%	100V	
C442	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C443	1-126-233-11	ELECT	22uF	20%	50V	
C444	1-126-101-11	ELECT	100uF	20%	16V	

Ref. No.	Part No.	Description				Remark
C445	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C447	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C448	1-126-233-11	ELECT	22uF	20%	50V	
C449	1-124-907-11	ELECT	10uF	20%	50V	
C450	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C451	1-124-925-11	ELECT	2.2uF	20%	100V	
C501	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C502	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C503	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	
C504	1-163-099-00	CERAMIC CHIP	18PF	5%	50V	
C505	1-163-099-00	CERAMIC CHIP	18PF	5%	50V	
C507	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C508	1-124-472-11	ELECT	470uF	20%	10V	
C509	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C510	1-124-443-00	ELECT	100uF	20%	10V	
C701	1-124-034-51	ELECT	33uF	20%	16V	
C702	1-130-483-00	MYLAR	0.01uF	5%	50V	
C705	1-130-495-00	MYLAR	0.1uF	5%	50V	
C706	1-130-495-00	MYLAR	0.1uF	5%	50V	
C707	1-130-495-00	MYLAR	0.1uF	5%	50V	
C708	1-124-907-11	ELECT	10uF	20%	50V	
C709	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C717	1-124-907-11	ELECT	10uF	20%	50V	
C718	1-124-907-11	ELECT	10uF	20%	50V	
C720	1-124-907-11	ELECT	10uF	20%	50V	
C721	1-124-034-51	ELECT	33uF	20%	16V	
C722	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C723	1-124-034-51	ELECT	33uF	20%	16V	
C724	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C730	1-126-233-11	ELECT	22uF	20%	50V	
C732	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C733	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C734	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	
C735	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	
C736	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	
C737	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C738	1-124-907-11	ELECT	10uF	20%	50V	
C739	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C744	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C745	1-126-301-11	ELECT	1uF	20%	50V	
C746	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C747	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
C748	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C749	1-163-087-00	CERAMIC CHIP	4PF		50V	
C801	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C802	1-124-126-00	ELECT	47uF	20%	10V	
C803	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C804	1-124-477-11	ELECT	47uF	20%	25V	
C901	1-126-233-11	ELECT	22uF	20%	50V	
C902	1-163-031-11	CERAMIC CHIP	0.01uF		50V	

Ref. No.	Part No.	Description				Remark
C903	1-124-126-00	ELECT	47uF	20%	10V	
C904	1-124-126-00	ELECT	47uF	20%	10V	
C905	1-124-443-00	ELECT	100uF	20%	10V	
C906	1-124-472-11	ELECT	470uF	20%	10V	
C907	1-124-126-00	ELECT	47uF	20%	10V	
C908	1-124-126-00	ELECT	47uF	20%	10V	
C915	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C951	1-124-925-11	ELECT	2.2uF	20%	100V	
C952	1-124-925-11	ELECT	2.2uF	20%	100V	
C953	1-124-598-11	ELECT	22uF	20%	25V	
C954	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C955	1-124-925-11	ELECT	2.2uF	20%	100V	
C956	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C957	1-124-903-11	ELECT	1uF	20%	50V	
C958	1-163-001-11	CERAMIC CHIP	220PF	10%	50V	

(CONNECTOR)

Ref. No.	Part No.	Description
CN101	1-573-846-11	CONNECTOR, BOARD TO BOARD 14P
CN102	1-573-848-11	CONNECTOR, BOARD TO BOARD 16P
* CN201	1-560-892-00	PIN, CONNECTOR 4P
* CN202	1-560-891-00	PIN, CONNECTOR 3P
* CN203	1-560-891-00	PIN, CONNECTOR 3P
* CN401	1-568-786-11	PIN, CONNECTOR 9P
CN402	1-506-469-11	PIN, CONNECTOR 4P
* CN403	1-568-787-11	PIN, CONNECTOR 10P
* CN404	1-573-136-11	PIN, CONNECTOR 13P
* CN405	1-560-891-00	PIN, CONNECTOR 3P
CN501	1-691-611-11	CONNECTOR, BOARD TO BOARD 22P
CN801	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P
CN803	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P

(JACK)

Ref. No.	Part No.	Description
CNJ001	1-568-185-21	JACK, PIN 4P (VIDEO LINE IN/OUT, AUDIO LINE IN/OUT)

(DIODE)

Ref. No.	Part No.	Description	
D402	8-719-101-50	DIODE	RD5.1E-L2
D403	8-719-911-19	DIODE	1SS119
D501	8-719-911-19	DIODE	1SS119
D506	8-719-911-19	DIODE	1SS119
D507	8-719-200-82	DIODE	11ES2
D701	8-759-157-40	IC	uPC574J
D702	8-719-911-19	DIODE	1SS119
D703	8-719-911-19	DIODE	1SS119
D704	8-719-911-19	DIODE	1SS119

(IC)

Ref. No.	Part No.	Description	
IC201	8-759-805-20	IC	LA7297
IC301	8-759-045-59	IC	uPD6450GT-606
IC302	8-759-996-03	IC	LVA519S

Ref. No.	Part No.	Description				Remark
⚠IC401	8-759-822-09	IC	LB1641			
IC402	8-759-912-77	IC	LM324N			
IC403	8-759-990-82	IC	TL082CP			
⚠IC405	8-759-246-14	IC	TA8823N			
IC406	8-759-981-85	IC	RC4556D			
IC407	8-759-135-80	IC	uPC358C			
IC501	8-752-837-57	IC	CXP80724-034Q			
IC502	8-759-501-99	IC	ST93C46AB1			
IC801	8-759-982-34	IC	RC78M09FA			
IC901	8-759-927-56	IC	BA7021			
IC951	8-759-513-05	IC	LVA521S			
		(JUMPER RESISTOR)				
JR101	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR102	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR103	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR104	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR105	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR106	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR107	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR108	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR109	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR110	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR111	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR112	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR113	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR114	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR115	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR116	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR117	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR118	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR209	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR211	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR312	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR313	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR314	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR408	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR552	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR725	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR745	1-216-295-00	METAL CHIP	0	5%	1/10W	
		(COIL)				
L201	1-410-120-11	INDUCTOR	1.2mH			
L203	1-410-089-11	INDUCTOR	15mH			
L301	1-410-513-11	INDUCTOR	22uH			
L302	1-412-470-21	INDUCTOR	22uH			
L303	1-408-421-00	INDUCTOR	100uH			
L304	1-408-421-00	INDUCTOR	100uH			
L305	1-410-501-11	INDUCTOR	2.2uH			
L401	1-408-413-00	INDUCTOR	22uH			
L402	1-408-413-00	INDUCTOR	22uH			
L403	1-410-519-11	INDUCTOR	68uH			
L499	1-408-421-00	INDUCTOR	100uH			
L502	1-408-409-00	INDUCTOR	10uH			
L503	1-408-409-00	INDUCTOR	10uH			
L701	1-410-521-11	INDUCTOR	100uH			
L702	1-410-521-11	INDUCTOR	100uH			
L703	1-408-409-00	INDUCTOR	10uH			
L704	1-408-409-00	INDUCTOR	10uH			
L705	1-410-509-11	INDUCTOR	10uH			
L707	1-410-521-11	INDUCTOR	100uH			
L708	1-410-521-11	INDUCTOR	100uH			
L901	1-410-521-11	INDUCTOR	100uH			
L902	1-408-421-00	INDUCTOR	100uH			
		(TRANSISTOR)				
Q103	8-729-424-18	TRANSISTOR	UN2113			
Q201	8-729-140-96	TRANSISTOR	2SD774-34			
Q301	8-729-422-28	TRANSISTOR	2SD601A-R			
Q302	8-729-421-19	TRANSISTOR	UN2213			
Q305	8-729-422-37	TRANSISTOR	2SB709A-R			
Q307	8-729-422-37	TRANSISTOR	2SB709A-R			
Q401	8-729-423-42	TRANSISTOR	2SA1309A-R			
Q402	8-729-424-12	TRANSISTOR	UN2112			
Q404	8-729-422-28	TRANSISTOR	2SD601A-R			
Q406	8-729-422-28	TRANSISTOR	2SD601A-R			
Q407	8-729-422-37	TRANSISTOR	2SB709A-R			
Q408	8-729-422-37	TRANSISTOR	2SB709A-R			
Q409	8-729-422-28	TRANSISTOR	2SD601A-R			
Q410	8-729-422-28	TRANSISTOR	2SD601A-R			
Q701	8-729-424-08	TRANSISTOR	UN2111			
Q703	8-729-424-08	TRANSISTOR	UN2111			
Q705	8-729-424-08	TRANSISTOR	UN2111			
Q709	8-729-422-28	TRANSISTOR	2SD601A-R			
Q710	8-729-422-28	TRANSISTOR	2SD601A-R			
Q714	8-729-422-28	TRANSISTOR	2SD601A-R			
Q715	8-729-422-28	TRANSISTOR	2SD601A-R			
Q717	8-729-422-28	TRANSISTOR	2SD601A-R			
Q718	8-729-422-37	TRANSISTOR	2SB709A-R			
Q719	8-729-422-37	TRANSISTOR	2SB709A-R			
Q720	8-729-421-19	TRANSISTOR	UN2213			
Q721	8-729-422-37	TRANSISTOR	2SB709A-R			
Q901	8-729-423-35	TRANSISTOR	2SC3311A-R			
Q902	8-729-422-28	TRANSISTOR	2SD601A-R			
Q903	8-729-422-28	TRANSISTOR	2SD601A-R			
		(RESISTOR)				
R102	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R201	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R202	1-216-073-00	METAL CHIP	10K	5%	1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
R203	1-249-387-11	CARBON	3.3	5%	1/4W	
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R205	1-249-433-11	CARBON	22K	5%	1/4W	
R207	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R208	1-216-001-00	METAL CHIP	10	5%	1/10W	
R212	1-216-041-00	METAL CHIP	470	5%	1/10W	
R213	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R214	1-216-037-00	METAL CHIP	330	5%	1/10W	
R215	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R216	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R217	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R218	1-216-031-00	METAL CHIP	180	5%	1/10W	
R219	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R220	1-216-056-00	METAL GLAZE	2K	5%	1/10W	
R222	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R223	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R225	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R226	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R227	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R301	1-216-060-00	METAL GLAZE	3K	5%	1/10W	
R302	1-216-056-00	METAL GLAZE	2K	5%	1/10W	
R303	1-216-047-00	METAL CHIP	820	5%	1/10W	
R304	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R305	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W	
R306	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R307	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R308	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R309	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R310	1-216-678-11	METAL CHIP	13K	0.5%	1/10W	
R315	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R316	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R318	1-216-045-00	METAL CHIP	680	5%	1/10W	
R319	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R320	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R321	1-249-417-11	CARBON	1K	5%	1/4W	
R322	1-216-677-11	METAL CHIP	12K	0.5%	1/10W	
R323	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R350	1-216-015-00	METAL CHIP	39	5%	1/10W	
R351	1-216-041-00	METAL CHIP	470	5%	1/10W	
R401	1-249-412-11	CARBON	390	5%	1/4W	
R402	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R403	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R404	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R405	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R406	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R407	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R408	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R409	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R410	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R411	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R412	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R413	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R414	1-249-427-11	CARBON	6.8K	5%	1/4W	
⚠R415	1-212-950-00	FUSIBLE	4.7	5%	1/2W	F
R416	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R417	1-216-033-00	METAL CHIP	220	5%	1/10W	
R418	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R419	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R420	1-249-410-11	CARBON	270	5%	1/4W	
R421	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R422	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R423	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R424	1-249-421-11	CARBON	2.2K	5%	1/4W	
R425	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R426	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R427	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R429	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R430	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R431	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R432	1-247-885-00	CARBON	180K	5%	1/4W	
R433	1-249-436-11	CARBON	39K	5%	1/4W	
R434	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R435	1-215-437-00	METAL	4.7K	1%	1/6W	
R436	1-215-445-00	METAL	10K	1%	1/6W	
R437	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W	
R438	1-216-673-11	METAL CHIP	8.2K	0.5%	1/10W	
R441	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R442	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R443	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R448	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R449	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R450	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R451	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R452	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R453	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R454	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R455	1-216-295-00	METAL CHIP	0	5%	1/10W	
R456	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R458	1-249-429-11	CARBON	10K	5%	1/4W	
R459	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R460	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R462	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R463	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R464	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R465	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R466	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R467	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R468	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R469	1-216-097-00	METAL CHIP	100K	5%	1/10W	

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Ref. No.	Part No.	Description				Remark
R470	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R471	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R473	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R474	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R475	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R476	1-216-040-00	METAL GLAZE	430	5%	1/10W	
R478	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R479	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R480	1-216-033-00	METAL CHIP	220	5%	1/10W	
R481	1-216-041-00	METAL CHIP	470	5%	1/10W	
R482	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R483	1-249-429-11	CARBON	10K	5%	1/4W	
R484	1-216-037-00	METAL CHIP	330	5%	1/10W	
R485	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R486	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R487	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R489	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R490	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R492	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R493	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R494	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R495	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R496	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R497	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R498	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R499	1-249-430-11	CARBON	12K	5%	1/4W	
R501	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R502	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R504	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R507	1-249-429-11	CARBON	10K	5%	1/4W	
R508	1-249-417-11	CARBON	1K	5%	1/4W	
R510	1-249-417-11	CARBON	1K	5%	1/4W	
R514	1-216-017-00	METAL CHIP	47	5%	1/10W	
R516	1-249-431-11	CARBON	15K	5%	1/4W	
R517	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R518	1-249-417-11	CARBON	1K	5%	1/4W	
R519	1-249-417-11	CARBON	1K	5%	1/4W	
R520	1-249-417-11	CARBON	1K	5%	1/4W	
R521	1-249-417-11	CARBON	1K	5%	1/4W	(DH MODEL)
R522	1-249-421-11	CARBON	2.2K	5%	1/4W	
R523	1-249-405-11	CARBON	100	5%	1/4W	
R524	1-249-421-11	CARBON	2.2K	5%	1/4W	
R525	1-249-405-11	CARBON	100	5%	1/4W	
R526	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R527	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R550	1-249-430-11	CARBON	12K	5%	1/4W	(EXCEPT DH MODEL)
R550	1-249-429-11	CARBON	10K	5%	1/4W	(DH MODEL)
R551	1-216-073-00	METAL CHIP	10K	5%	1/10W	(EXCEPT DH MODEL)
R551	1-216-075-00	METAL CHIP	12K	5%	1/10W	(DH MODEL)
R553	1-249-435-11	CARBON	33K	5%	1/4W	
R701	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R703	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R704	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R706	1-249-420-11	CARBON	1.8K	5%	1/4W	
R707	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R708	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R709	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R710	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R711	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R714	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R728	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R729	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R730	1-216-025-00	METAL CHIP	100	5%	1/10W	
R731	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R732	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R733	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R734	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R737	1-216-023-00	METAL CHIP	82	5%	1/10W	
R738	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R739	1-216-021-00	METAL CHIP	68	5%	1/10W	
R740	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R741	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R742	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R743	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R744	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R746	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R747	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R748	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R750	1-216-013-00	METAL CHIP	33	5%	1/10W	
R751	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R752	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R753	1-216-073-00	METAL CHIP	10K	5%	1/10W	(DH MODEL)
R754	1-249-417-11	CARBON	1K	5%	1/4W	
R903	1-216-047-00	METAL CHIP	820	5%	1/10W	
R904	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R905	1-216-045-00	METAL CHIP	680	5%	1/10W	
R906	1-216-038-00	METAL CHIP	360	5%	1/10W	
R907	1-216-045-00	METAL CHIP	680	5%	1/10W	
R908	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R910	1-249-408-11	CARBON	180	5%	1/4W	
R912	1-216-021-00	METAL CHIP	68	5%	1/10W	
R913	1-216-023-00	METAL CHIP	82	5%	1/10W	
R914	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R915	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R916	1-216-073-00	METAL CHIP	10K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R917	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R950	1-249-435-11	CARBON	33K	5%	1/4W	
R951	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R953	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R954	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R955	1-216-049-00	METAL CHIP	1K	5%	1/10W	

(MODULATOR)

Ref. No.	Part No.	Description	Remark
⚠RF701	1-466-350-11	MODULATOR, RF (RFU-2018) (EXCEPT DH MODEL)	
⚠RF701	1-466-349-11	MODULATOR, RF (RFU-2019) (DH MODEL)	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description	Remark
RV201	1-238-021-11	RES, ADJ, CARBON 220K	
RV501	1-241-632-11	RES, ADJ, CARBON 47K	

(TRANSFORMER)

Ref. No.	Part No.	Description	Remark
T201	1-433-330-11	TRANSFORMER, BIAS OSCILLATION	

(TUNER)

Ref. No.	Part No.	Description	Remark
⚠TU701	1-465-898-11	TUNER, VIF (BTF-3G501) (EXCEPT DH MODEL)	
⚠TU701	1-465-896-11	TUNER, VIF (BTF-3G502) (DH MODEL)	

(VIBRATOR)

Ref. No.	Part No.	Description	Remark
X301	1-577-289-11	VIBRATOR, CRYSTAL 17.7 MHz	
X501	1-578-774-11	VIBRATOR, CRYSTAL 12 MHz	

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* A-6721-468-A MF-154 BOARD, COMPLETE (DH MODEL)
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* A-6721-470-A MF-154 BOARD, COMPLETE (PS/ME/EE MODEL)
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(Ref. No. 4000 Series)

Ref. No.	Part No.	Description	Remark
	1-572-662-11	SWITCH, ROTARY	
*	3-946-633-01	HOLDER, FL	

(CAPACITOR)

Ref. No.	Part No.	Description				Remark
C001	1-126-096-11	ELECT	10uF	20%	35V	
C002	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C003	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V	
C004	1-163-102-00	CERAMIC CHIP	24PF	5%	50V	
C005	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C006	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C007	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C009	1-128-057-11	ELECT	330uF	20%	6.3V	
C011	1-124-589-11	ELECT	47uF	20%	16V	
C012	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C013	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C014	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN001	1-568-080-11	CONNECTOR (RECEPTALE) 22P	
CN002	1-691-612-11	SOCKET, CONNECTOR 5P	
CN003	1-569-264-11	CONNECTOR, FPC (ZIF TYPE) 8P	
CN004	1-580-850-11	CONNECTOR (DMS) 8P	

(DIODE)

Ref. No.	Part No.	Description		Remark
D001	8-719-911-19	DIODE	1SS119	
D002	8-719-911-19	DIODE	1SS119	
D003	8-719-110-06	DIODE	RD8.2ES-B1	
D004	8-719-911-19	DIODE	1SS119	
D005	8-719-911-19	DIODE	1SS119	
D006	8-719-911-19	DIODE	1SS119	
D007	8-719-911-19	DIODE	1SS119	
D008	8-719-911-19	DIODE	1SS119	
D009	8-719-911-19	DIODE	1SS119 (DH MODEL)	
D010	8-719-911-19	DIODE	1SS119	
D011	8-719-911-19	DIODE	1SS119	
D012	8-719-911-19	DIODE	1SS119	
D013	8-719-109-93	DIODE	RD6.2ES-B2	
D014	8-719-109-93	DIODE	RD6.2ES-B2	
D015	8-719-109-93	DIODE	RD6.2ES-B2	
D016	8-719-109-93	DIODE	RD6.2ES-B2	
D017	8-719-109-93	DIODE	RD6.2ES-B2	
D018	8-719-109-93	DIODE	RD6.2ES-B2	
D019	8-719-109-93	DIODE	RD6.2ES-B2	
D020	8-719-109-93	DIODE	RD6.2ES-B2	

(IC)

Ref. No.	Part No.	Description		Remark
IC001	8-752-832-64	IC	CXP50116-275Q	
IC002	8-759-515-58	IC	PST572H	
IC003	8-759-510-43	IC	PST572C	

(METAL CHIP)

Ref. No.	Part No.	Description				Remark
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR002	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR004	1-216-295-00	METAL CHIP	0	5%	1/10W	

(COIL)

Ref. No.	Part No.	Description	Remark
L001	1-410-521-11	INDUCTOR 100uH	
L002	1-410-521-11	INDUCTOR 100uH	
L003	1-410-501-11	INDUCTOR 2.2uH	
L004	1-410-501-11	INDUCTOR 2.2uH	

(INDICATOR)

Ref. No.	Part No.	Description	Remark
ND001	1-519-723-11	INDICATOR TUBE, FLUORESCENT	

(RESISTOR)

Ref. No.	Part No.	Description				Remark
R001	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R002	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
R003	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R004	1-249-431-11	CARBON	15K	5%	1/4W	
R005	1-216-001-00	METAL CHIP	10	5%	1/10W	
R006	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R007	1-249-417-11	CARBON	1K	5%	1/4W	
R008	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R010	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R011	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R012	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R013	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R014	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R015	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R016	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R017	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R018	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R019	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R020	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R021	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R022	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R023	1-249-413-11	CARBON	470	5%	1/4W	
R024	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R025	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R026	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R027	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R028	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R029	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R030	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R031	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R054	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R055	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R056	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R057	1-216-023-00	METAL CHIP	82	5%	1/10W	
R058	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R059	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R060	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R061	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R062	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R063	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R064	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R065	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R066	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R067	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R068	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R069	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R070	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R071	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R072	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R073	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R076	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R077	1-249-417-11	CARBON	1K	5%	1/4W	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description	Remark
RV001	1-241-906-11	RES, VAR, CARBON 10K (SHARPNESS)	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S002	1-571-977-11	SWITCH, TACTIL (PAUSE ❚❚)	
S003	1-571-977-11	SWITCH, TACTIL (CL)	
S004	1-572-908-11	SWITCH, SLIDE (RENTAL PICTURE)	
S005	1-572-908-11	SWITCH, SLIDE (SYSTEM) (DH MODEL)	
S006	1-570-854-11	SWITCH, SLIDE (COLOR SYSTEM)	

(VIBRATOR)

Ref. No.	Part No.	Description	Remark
X001	1-577-101-11	VIBRATOR, CERAMIC 4.19 MHz	
X002	1-579-463-11	VIBRATOR, CRYSTAL 32.768 kHz	

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* A-6756-376-A MF-155 BOARD, COMPLETE
****
(Ref. No. 5000 Series)

(CAPACITOR)

Ref. No.	Part No.	Description	Remark
C051	1-163-038-00	CERAMIC CHIP 0.1uF 25V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN051	1-691-612-11	SOCKET, CONNECTOR 5P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D051	8-719-303-02	DIODE SEL2510C-D (POWER)	
D052	8-719-303-02	DIODE SEL2510C-D (POWER)	

(IC)

Ref. No.	Part No.	Description	Remark
IC051	1-466-131-21	IC GP1U52X	

(RESISTOR)

Ref. No.	Part No.	Description	Remark
R051	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R052	1-216-027-00	METAL CHIP 120 5% 1/10W	
R053	1-216-027-00	METAL CHIP 120 5% 1/10W	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S051	1-571-977-11	SWITCH, TACTIL (ON/STANDBY)	
S052	1-571-977-11	SWITCH, TACTIL (EJECT ▲)	

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* A-6727-428-A RP-139 BOARD, COMPLETE
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(Ref. No. 1000 Series)

(CAPACITOR)

Ref. No.	Part No.	Description	Remark
C101	1-161-379-00	CERAMIC 0.01uF 20% 25V	

Ref. No.	Part No.	Description				Remark
C102	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C103	1-164-159-11	CERAMIC	0.1uF		50V	
C106	1-164-159-11	CERAMIC	0.1uF		50V	
C107	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C108	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C109	1-124-463-00	ELECT	0.1uF	20%	50V	
C110	1-164-056-11	CERAMIC	27PF	5%	50V	
C111	1-164-096-11	CERAMIC	0.01uF		50V	
C112	1-164-098-11	CERAMIC	0.047uF		12V	
C113	1-124-589-11	ELECT	47uF	20%	16V	
C114	1-164-096-11	CERAMIC	0.01uF		50V	
C115	1-164-038-11	CERAMIC	2PF	0.25PF	50V	
C116	1-164-096-11	CERAMIC	0.01uF		50V	
C117	1-164-058-11	CERAMIC	33PF	5%	50V	
C118	1-164-096-11	CERAMIC	0.01uF		50V	
C119	1-164-070-11	CERAMIC	100PF	5%	50V	
C120	1-102-820-00	CERAMIC	330PF	5%	50V	
C121	1-164-066-11	CERAMIC	68PF	5%	50V	
C123	1-164-096-11	CERAMIC	0.01uF		50V	
C124	1-164-096-11	CERAMIC	0.01uF		50V	
C125	1-124-126-00	ELECT	47uF	20%	10V	
C126	1-124-589-11	ELECT	47uF	20%	16V	
C127	1-164-096-11	CERAMIC	0.01uF		50V	
C128	1-164-096-11	CERAMIC	0.01uF		50V	
C129	1-164-096-11	CERAMIC	0.01uF		50V	
C130	1-164-096-11	CERAMIC	0.01uF		50V	
C131	1-164-096-11	CERAMIC	0.01uF		50V	
C132	1-124-126-00	ELECT	47uF	20%	10V	
C140	1-164-046-11	CERAMIC	10PF	0.5PF	50V	

(CONNECTOR)

CN101	1-691-613-11	CONNECTOR, BOARD TO BOARD 6P
CN102	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P
* CN103	1-564-031-00	PIN, CONNECTOR 6P

(DIODE)

D101	8-719-911-19	DIODE	1SS119

(IC)

IC101	8-759-048-53	IC	LA7376-A

(COIL)

L101	1-408-421-00	INDUCTOR	100uH
L102	1-408-417-00	INDUCTOR	47uH
L103	1-408-413-00	INDUCTOR	22uH
L104	1-408-416-00	INDUCTOR	39uH
L105	1-408-409-00	INDUCTOR	10uH
L106	1-408-424-00	INDUCTOR	180uH
L107	1-408-411-00	INDUCTOR	15uH
L109	1-408-421-00	INDUCTOR	100uH

Ref. No.	Part No.	Description		Remark
L110	1-408-421-00	INDUCTOR	100uH	

(TRANSISTOR)

Q101	8-729-423-35	TRANSISTOR	2SC3311A-R
Q102	8-729-423-42	TRANSISTOR	2SA1309A-R
Q103	8-729-423-35	TRANSISTOR	2SC3311A-R
Q105	8-729-900-89	TRANSISTOR	DTC144ES
Q106	8-729-900-89	TRANSISTOR	DTC144ES
Q107	8-729-423-35	TRANSISTOR	2SC3311A-R
Q110	8-729-423-35	TRANSISTOR	2SC3311A-R
Q111	8-729-900-89	TRANSISTOR	DTC144ES
Q112	8-729-423-35	TRANSISTOR	2SC3311A-R

(RESISTOR)

R101	1-249-417-11	CARBON	1K	5%	1/4W
R102	1-247-850-11	CARBON	6.2K	5%	1/4W
R103	1-249-431-11	CARBON	15K	5%	1/4W
R104	1-249-418-11	CARBON	1.2K	5%	1/4W
R105	1-247-852-11	CARBON	7.5K	5%	1/4W
R106	1-249-427-11	CARBON	6.8K	5%	1/4W
R107	1-249-431-11	CARBON	15K	5%	1/4W
R108	1-247-866-11	CARBON	30K	5%	1/4W
R109	1-249-430-11	CARBON	12K	5%	1/4W
R110	1-249-421-11	CARBON	2.2K	5%	1/4W
R111	1-249-433-11	CARBON	22K	5%	1/4W
R112	1-249-433-11	CARBON	22K	5%	1/4W
R113	1-249-418-11	CARBON	1.2K	5%	1/4W
R114	1-249-416-11	CARBON	820	5%	1/4W
R115	1-249-421-11	CARBON	2.2K	5%	1/4W
R116	1-249-421-11	CARBON	2.2K	5%	1/4W
R117	1-249-412-11	CARBON	390	5%	1/4W
R118	1-249-412-11	CARBON	390	5%	1/4W
R119	1-249-416-11	CARBON	820	5%	1/4W
R120	1-249-426-11	CARBON	5.6K	5%	1/4W
R121	1-249-421-11	CARBON	2.2K	5%	1/4W
R122	1-249-414-11	CARBON	560	5%	1/4W
R123	1-249-415-11	CARBON	680	5%	1/4W
R124	1-249-413-11	CARBON	470	5%	1/4W
R125	1-249-421-11	CARBON	2.2K	5%	1/4W
R127	1-249-416-11	CARBON	820	5%	1/4W
R128	1-249-429-11	CARBON	10K	5%	1/4W
R129	1-249-417-11	CARBON	1K	5%	1/4W
R133	1-249-429-11	CARBON	10K	5%	1/4W
R134	1-249-426-11	CARBON	5.6K	5%	1/4W
R135	1-249-417-11	CARBON	1K	5%	1/4W
R136	1-247-828-11	CARBON	750	5%	1/4W
R137	1-249-420-11	CARBON	1.8K	5%	1/4W
R138	1-249-416-11	CARBON	820	5%	1/4W
R139	1-249-425-11	CARBON	4.7K	5%	1/4W
R140	1-247-826-00	CARBON	620	5%	1/4W

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* A-6727-430-A YC-120 BOARD, COMPLETE

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(Ref. No. 2000 Series)

(CAPACITOR)

Ref. No.	Part No.	Description				Remark
C001	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C002	1-163-113-00	CERAMIC CHIP	68PF	5%	50V	
C003	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C004	1-163-129-00	CERAMIC CHIP	330PF	5%	50V	
C005	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C006	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C007	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C008	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C009	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C010	1-124-126-00	ELECT	47uF	20%	10V	
C011	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C012	1-124-907-11	ELECT	10uF	20%	50V	
C013	1-124-907-11	ELECT	10uF	20%	50V	
C014	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C015	1-124-907-11	ELECT	10uF	20%	50V	
C017	1-124-126-00	ELECT	47uF	20%	10V	
C018	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C019	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C020	1-124-903-11	ELECT	1uF	20%	50V	
C021	1-124-903-11	ELECT	1uF	20%	50V	
C022	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C023	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C027	1-163-115-00	CERAMIC CHIP	82PF	5%	50V	
C028	1-163-089-00	CERAMIC CHIP	6PF		50V	
C029	1-163-123-00	CERAMIC CHIP	180PF	5%	50V	
C030	1-163-107-00	CERAMIC CHIP	39PF	5%	50V	
C031	1-163-111-00	CERAMIC CHIP	56PF	5%	50V	
C032	1-124-277-11	ELECT	4.7uF	20%	35V	
C033	1-163-139-00	CERAMIC CHIP	820PF	5%	50V	
C034	1-163-088-00	CERAMIC CHIP	5PF		50V	
C035	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C036	1-163-113-00	CERAMIC CHIP	68PF	5%	50V	
C037	1-124-907-11	ELECT	10uF	20%	50V	
C038	1-124-907-11	ELECT	10uF	20%	50V	
C039	1-163-033-00	CERAMIC CHIP	0.022uF		50V	
C040	1-124-252-00	ELECT	0.33uF	20%	50V	
C041	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C042	1-163-033-00	CERAMIC CHIP	0.022uF		50V	
C043	1-124-903-11	ELECT	1uF	20%	50V	
C044	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C045	1-124-903-11	ELECT	1uF	20%	50V	
C047	1-163-033-00	CERAMIC CHIP	0.022uF		50V	
C048	1-163-114-00	CERAMIC CHIP	75PF	5%	50V	
C049	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C050	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C051	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C052	1-124-927-11	ELECT	4.7uF	20%	100V	
C053	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C057	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C058	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	
C059	1-124-126-00	ELECT	47uF	20%	10V	
C060	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C061	1-124-903-11	ELECT	1uF	20%	50V	
C062	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C063	1-163-127-00	CERAMIC CHIP	270PF	5%	50V	
C064	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C065	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C066	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C067	1-163-111-00	CERAMIC CHIP	56PF	5%	50V	
C068	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C069	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C070	1-163-111-00	CERAMIC CHIP	56PF	5%	50V	
C071	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C072	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C073	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C074	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C075	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C077	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	
C078	1-130-477-00	MYLAR	0.0033uF	5%	50V	
C079	1-124-463-00	ELECT	0.1uF	20%	50V	
C080	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C081	1-163-139-00	CERAMIC CHIP	820PF	5%	50V	
C082	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C083	1-124-126-00	ELECT	47uF	20%	10V	
C084	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C085	1-124-927-11	ELECT	4.7uF	20%	100V	
C086	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C087	1-163-113-00	CERAMIC CHIP	68PF	5%	50V	
C088	1-124-126-00	ELECT	47uF	20%	10V	
C089	1-124-126-00	ELECT	47uF	20%	10V	
C090	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C091	1-124-589-11	ELECT	47uF	20%	16V	
C092	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C093	1-124-126-00	ELECT	47uF	20%	10V	
C094	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C096	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C097	1-124-589-11	ELECT	47uF	20%	16V	
C098	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C100	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C101	1-124-126-00	ELECT	47uF	20%	10V	
C104	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C105	1-163-091-00	CERAMIC CHIP	8PF		50V	
C107	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C111	1-163-107-00	CERAMIC CHIP	39PF	5%	50V	

Ref. No.	Part No.	Description				Remark
C113	1-163-103-00	CERAMIC CHIP	27PF	5%	50V	
C114	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C118	1-163-089-00	CERAMIC CHIP	6PF		50V	
C119	1-163-103-00	CERAMIC CHIP	27PF	5%	50V	
C120	1-163-113-00	CERAMIC CHIP	68PF	5%	50V	
C130	1-163-038-00	CERAMIC CHIP	0.1uF		25V	

(FILTER, CERAMIC)

Ref. No.	Part No.	Description	Remark
CF001	1-527-943-00	FILTER, CERAMIC	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN001	1-573-828-11	CONNECTOR, BOARD TO BOARD 14P	
CN002	1-573-830-11	CONNECTOR, BOARD TO BOARD 16P	

(DIODE)

Ref. No.	Part No.	Description		Remark
D001	8-719-911-19	DIODE	1SS119	
D002	8-719-911-19	DIODE	1SS119	
D003	8-719-911-19	DIODE	1SS119	
D004	8-719-911-19	DIODE	1SS119	
D006	8-719-911-19	DIODE	1SS119	
D007	8-719-911-19	DIODE	1SS119	
D008	8-719-911-19	DIODE	1SS119	

(DELAY LINE)

Ref. No.	Part No.	Description	Remark
DL001	1-415-728-21	DELAY LINE, 2H (ULTRASONIC)	
DL002	1-415-856-11	DELAY LINE, ULTRASONIC GLASS	

(IC)

Ref. No.	Part No.	Description		Remark
IC001	8-759-046-76	IC	LA7396	
IC002	8-759-821-51	IC	LC8992	
IC003	8-759-637-11	IC	M52063SP	
IC004	8-759-996-63	IC	BA7025L	

(JUMPER RESISTOR)

Ref. No.	Part No.	Description				Remark
JR003	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR044	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR051	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR052	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR053	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR054	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR055	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR056	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR057	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR058	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR059	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR060	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR061	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR062	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR063	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR064	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR065	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR066	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR067	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR068	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR069	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR070	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR071	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR072	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR073	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR074	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR075	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR076	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR077	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR078	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR079	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR080	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR081	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR082	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR083	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR084	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR085	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR086	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR087	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR088	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR089	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR090	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR091	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR092	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR093	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR094	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR095	1-216-295-00	METAL CHIP	0	5%	1/10W	

(COIL)

Ref. No.	Part No.	Description		Remark
L001	1-410-524-41	INDUCTOR	180uH	
L002	1-408-411-00	INDUCTOR	15uH	
L003	1-408-411-00	INDUCTOR	15uH	
L006	1-408-416-00	INDUCTOR	39uH	
L008	1-408-403-00	INDUCTOR	3.3uH	
L009	1-408-421-00	INDUCTOR	100uH	
L010	1-408-421-00	INDUCTOR	100uH	
L011	1-410-515-11	INDUCTOR	33uH	
L012	1-410-517-11	INDUCTOR	47uH	
L013	1-410-437-11	INDUCTOR	330uH	
L014	1-410-439-11	INDUCTOR	470uH	
L015	1-408-421-00	INDUCTOR	100uH	
L016	1-408-421-00	INDUCTOR	100uH	
L017	1-408-421-00	INDUCTOR	100uH	
L018	1-408-419-00	INDUCTOR	68uH	
L019	1-408-421-00	INDUCTOR	100uH	

Ref. No.	Part No.	Description				Remark
L020	1-408-415-00	INDUCTOR	33uH			
L023	1-410-435-21	INDUCTOR	220uH			

(TRANSISTOR)

Ref. No.	Part No.	Description		Remark
Q002	8-729-422-28	TRANSISTOR	2SD601A-R	
Q003	8-729-422-28	TRANSISTOR	2SD601A-R	
Q004	8-729-422-28	TRANSISTOR	2SD601A-R	
Q005	8-729-422-28	TRANSISTOR	2SD601A-R	
Q006	8-729-422-28	TRANSISTOR	2SD601A-R	
Q007	8-729-422-28	TRANSISTOR	2SD601A-R	
Q008	8-729-421-19	TRANSISTOR	UN2213	
Q009	8-729-424-18	TRANSISTOR	UN2113	
Q011	8-729-422-37	TRANSISTOR	2SB709A-R	
Q012	8-729-422-37	TRANSISTOR	2SB709A-R	
Q013	8-729-421-19	TRANSISTOR	UN2213	
Q014	8-729-424-56	TRANSISTOR	UN211L	
Q015	8-729-424-18	TRANSISTOR	UN2113	
Q016	8-729-422-37	TRANSISTOR	2SB709A-R	
Q017	8-729-422-37	TRANSISTOR	2SB709A-R	
Q018	8-729-422-28	TRANSISTOR	2SD601A-R	
Q020	8-729-422-37	TRANSISTOR	2SB709A-R	
Q022	8-729-422-28	TRANSISTOR	2SD601A-R	
Q033	8-729-421-19	TRANSISTOR	UN2213	
Q034	8-729-421-19	TRANSISTOR	UN2213	
Q035	8-729-421-19	TRANSISTOR	UN2213	
Q110	8-729-421-22	TRANSISTOR	UN2211	

(RESISTOR)

Ref. No.	Part No.	Description				Remark
R001	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R002	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R003	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R004	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R005	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R006	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R007	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R008	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R009	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R010	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R011	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R012	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R013	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R014	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R015	1-216-041-00	METAL CHIP	470	5%	1/10W	
R016	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R017	1-216-035-00	METAL CHIP	270	5%	1/10W	
R018	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R019	1-216-035-00	METAL CHIP	270	5%	1/10W	
R020	1-249-435-11	CARBON	33K	5%	1/4W	
R022	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R023	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R024	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R025	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R026	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R029	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R030	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R031	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R034	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R035	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R037	1-216-052-00	METAL CHIP	1.3K	5%	1/10W	
R038	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R039	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R040	1-216-037-00	METAL CHIP	330	5%	1/10W	
R041	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R042	1-216-052-00	METAL CHIP	1.3K	5%	1/10W	
R043	1-216-036-00	METAL CHIP	300	5%	1/10W	
R045	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R046	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R049	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R050	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R051	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R052	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R053	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R054	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R055	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R057	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R058	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R059	1-216-045-00	METAL CHIP	680	5%	1/10W	
R060	1-216-045-00	METAL CHIP	680	5%	1/10W	
R061	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R062	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R063	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R064	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R065	1-216-045-00	METAL CHIP	680	5%	1/10W	
R066	1-216-047-00	METAL CHIP	820	5%	1/10W	
R067	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R068	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R069	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R070	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R071	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R072	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R073	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R074	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R075	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R076	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R077	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R078	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R110	1-216-045-00	METAL CHIP	680	5%	1/10W	
R111	1-249-417-11	CARBON	1K	5%	1/4W	
R113	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R114	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R115	1-216-045-00	METAL CHIP	680	5%	1/10W	
R116	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R117	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R118	1-249-404-00	CARBON	82	5%	1/4W	
R119	1-216-045-00	METAL CHIP	680	5%	1/10W	
R120	1-216-037-00	METAL CHIP	330	5%	1/10W	
R122	1-216-295-00	METAL CHIP	0	5%	1/10W	
R123	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R124	1-216-081-00	METAL CHIP	22K	5%	1/10W	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description
RV002	1-241-630-11	RES, ADJ, CARBON 10K
RV003	1-241-630-11	RES, ADJ, CARBON 10K
RV004	1-241-630-11	RES, ADJ, CARBON 10K
RV005	1-241-630-11	RES, ADJ, CARBON 10K
RV006	1-241-628-11	RES, ADJ, CARBON 2.2K
RV007	1-241-630-11	RES, ADJ, CARBON 10K
RV008	1-238-011-11	RES, ADJ, CARBON 470

(COIL)

Ref. No.	Part No.	Description
T001	1-409-467-11	COIL (TRAP 7.8K)

(VIBRATOR)

Ref. No.	Part No.	Description
X001	1-579-608-11	VIBRATOR, CRYSTAL 4.433619MHz

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1-413-719-11 POWER BLOCK (PS/DH/ME)
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(Ref.No 7000 Series)

Ref. No.	Part No.	Description
⚠	1-540-054-11	INLET AC

(CAPACITOR)

Ref. No.	Part No.	Description				Remark
⚠C101	9-902-038-01	METALIZED	0.22MF		250V	
⚠C102	9-902-039-01	METALIZED	0.1MF		250V	
⚠C103	1-161-742-00	CERAMIC CHIP	2200PF	20%	250V	
⚠C104	1-161-742-00	CERAMIC CHIP	2200PF	20%	250V	
⚠C105	1-161-742-00	CERAMIC CHIP	2200PF	20%	250V	
⚠C106	1-162-599-12	CERAMIC CHIP	4700PF	20%	250V	
⚠C107	1-162-599-12	CERAMIC CHIP	4700PF	20%	250V	
⚠C108	9-902-040-01	ELECT	180MF		400V	
C109	9-902-492-11	METALIZED	0.047MF		400V	
C110	9-902-547-01	CERAMIC	220PF		1KV	
C111	1-124-791-11	ELECT	1MF	20%	100V	
C112	1-130-495-00	MYLAR	0.1MF	5%	50V	
C113	1-130-491-00	MYLAR	0.047MF	5%	50V	
C115	1-130-491-00	MYLAR	0.047MF	5%	50V	
C201	1-124-122-11	ELECT	100MF	20%	50V	
C202	1-124-443-00	ELECT	100MF	20%	10V	
C203	1-124-556-11	ELECT	2200MF	20%	16V	
C204	1-124-445-11	ELECT	100MF	20%	16V	
C205	1-124-445-11	ELECT	100MF	20%	16V	
C206	1-124-893-11	ELECT	2200MF	20%	16V	
C207	1-124-903-11	ELECT	1MF	20%	50V	
C208	1-124-472-11	ELECT	470MF	20%	10V	
C209	1-124-443-00	ELECT	100MF	20%	10V	
C211	1-124-122-11	ELECT	100MF	20%	50V	
C212	1-124-471-00	ELECT	1000MF	20%	6.3V	
C213	1-130-483-00	MYLAR	0.01MF	5%	50V	
C214	1-130-483-00	MYLAR	0.01MF	5%	50V	
C215	1-124-443-00	ELECT	100MF	20%	10V	
C216	1-130-483-00	MYLAR	0.01MF	5%	50V	
C217	9-998-888-01	CERAMIC CHIP	1000PF		1KV	

(CONNECTOR)

Ref. No.	Part No.	Description
CN1	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P

(DIODE)

Ref. No.	Part No.	Description
⚠D101	8-719-510-06	DIODE S1WB60
⚠D102	8-902-095-01	DIODE ERA15-06
⚠D103	9-902-489-01	DIODE EG01C
D104	9-900-535-01	DIODE AU02Z
D105	9-900-535-01	DIODE AU02Z
D106	8-719-175-88	DIODE RD7.5F-B3
D107	9-902-552-01	DIODE MA165
D108	8-719-109-63	DIODE RD3.0ES-B2
⚠D201	9-900-535-01	DIODE AU02Z
D202	8-719-114-88	DIODE RD18JS-B3
⚠D203	8-719-230-02	DIODE 30DF2
⚠D204	8-719-982-04	DIODE ERB81-004
⚠D205	9-900-535-01	DIODE AU02Z
⚠D206	9-900-535-01	DIODE AU02Z

(FUSE)

Ref. No.	Part No.	Description		
⚠F101	1-532-203-00	FUSE, TIME-LAG	2A	250V

(IC)

Ref. No.	Part No.	Description
⚠IC201	8-759-420-19	IC AN1431T
⚠IC202	8-749-921-99	IC SI-3120CA
⚠IC203	8-749-921-99	IC SI-3120CA
⚠IC204	8-759-420-19	IC AN1431T

(COIL)

Ref. No.	Part No.	Description
⚠L101	9-900-520-01	LINE FILTER
L102	9-902-553-01	BEADS CORE
L201	1-410-470-11	MICRO INDUCTOR (10uH)

(PHOTO COUPLER)

Ref. No.	Part No.	Description
⚠PC101	9-902-498-11	COUPLER, PHOTO

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

POWER BLOCK (PS/DH/ME)

Ref. No.	Part No.	Description				Remark
		(TRANSISTOR)				
⚠Q101	9-902-496-11	TRANSISTOR	2SC4300			
⚠Q102	9-900-519-01	TRANSISTOR	2SC3377			
Q202	8-729-140-98	TRANSISTOR	2SD773-5			
		(RESISTOR)				
⚠R101	9-902-548-01	CEMENT	4.7		3W	
R102	1-247-883-00	CARBON(SMALL)	150K	5%	1/4W	
R103	1-247-883-00	CARBON(SMALL)	150K	5%	1/4W	
R104	1-247-883-00	CARBON(SMALL)	150K	5%	1/4W	
R105	1-249-438-11	CARBON(SMALL)	56K	5%	1/4W	
⚠R106	9-902-494-11	METAL OXIDE	68K		3W	
R107	1-215-886-11	METAL OXIDE	100	5%	2W	
R108	1-215-910-00	METAL OXIDE	68	5%	3W	
R109	1-249-414-11	CARBON(SMALL)	560	5%	1/4W	
R111	1-249-406-11	CARBON(SMALL)	120	5%	1/4W	
⚠R201	1-247-727-11	CARBON	10	5%	1/2W	
R203	1-249-417-11	CARBON(SMALL)	1K	5%	1/4W	
R205	1-260-083-11	CARBON(SMALL)	47	5%	1/2W	
R206	1-247-838-00	METAL FILM	2K	5%	1/4W	
R207	1-249-421-11	METAL FILM	1.5K	5%	1/4W	
⚠R211	9-902-485-01	FUSE	10	5%	1/4W	
R212	1-249-429-11	CARBON(SMALL)	10K	5%	1/4W	
⚠R213	9-902-556-01	FUSE	1	5%	1/4W	
R214	1-249-405-11	CARBON(SMALL)	100	5%	1/4W	
R215	1-249-405-11	CARBON(SMALL)	100	5%	1/4W	
R216	1-249-417-11	CARBON(SMALL)	1K	5%	1/4W	
R217	1-249-406-11	CARBON(SMALL)	120	5%	1/4W	
R218	1-249-421-11	METAL FILM	1.5K	5%	1/4W	
R219	1-249-421-11	METAL FILM	1.5K	5%	1/4W	
R223	1-249-410-11	CARBON(SMALL)	270	5%	1/4W	
		(THYRISTOR)				
⚠SCR201	9-902-500-11	THYRISTOR	2P4M			
		(TRANSFORMER)				
⚠T101	9-902-549-01	TRANS, SWITCHING				

****

POWER BLOCK (EE)

1-413-718-11 POWER BLOCK (EE) (Ref. No 6,000 Series)
****

Ref. No.	Part No.	Description				Remark
⚠	1-540-045-11	INLET, AC				
		(CAPACITOR)				
⚠C101	9-902-039-01	METALIZED	0.1uF		250V	
⚠C102	9-902-039-01	METALIZED	0.1uF		250V	
⚠C103	1-161-742-00	CERAMIC	2200PF	20%	250V	
⚠C104	1-161-742-00	CERAMIC	2200PF	20%	250V	
⚠C105	1-161-742-00	CERAMIC	2200PF	20%	250V	
⚠C106	1-161-742-00	CERAMIC	2200PF	20%	250V	
⚠C107	1-162-599-12	CERAMIC	4700PF	20%	250V	
⚠C108	1-162-599-12	CERAMIC	4700PF	20%	250V	
⚠C109	1-162-599-12	CERAMIC	4700PF	20%	250V	
⚠C110	9-902-493-11 1 128 523 11	ELECT	82uF		400V	L
C111	9-902-492-11	METALIZED	0.047uF		400V	
C112	9-902-547-01	CERAMIC	220PF		1KV	
C114	1-130-491-00	MYLAR	0.047uF	5%	50V	
C115	1-130-491-00	MYLAR	0.047uF	5%	50V	
C201	1-124-122-11	ELECT	100uF	20%	50V	
C202	1-124-443-00	ELECT	100uF	20%	10V	
C203	1-124-556-11	ELECT	2200uF	20%	16V	
C204	1-126-101-11	ELECT	100uF	20%	16V	
C205	1-126-101-11	ELECT	100uF	20%	16V	
C206	1-124-893-11	ELECT	2200uF	20%	10V	
C207	1-124-903-11	ELECT	1uF	20%	50V	
C208	1-124-472-11	ELECT	470uF	20%	10V	
C209	1-124-443-00	ELECT	100uF	20%	10V	
C211	1-124-122-11	ELECT	100uF	20%	50V	
C212	1-124-471-00	ELECT	1000uF	20%	6.3V	
C213	1-130-483-00	MYLAR	0.01uF	5%	50V	
C214	1-130-483-00	MYLAR	0.01uF	5%	50V	
C215	1-124-443-00	ELECT	100uF	20%	10V	
C216	1-130-483-00	MYLAR	0.01uF	5%	50V	
C217	9-998-888-01	CERAMIC	1000PF		1KV	
		(CONNECTOR)				
CN1	1-569-341-11	CONNECTOR BOARD TO BOARD 19P				
		(DIODE)				
⚠D101	8-719-510-06	DIODE S1WB60				
⚠D102	9-902-094-01	DIODE AM01A				
D103	9-902-489-01	DIODE EG01C				
D104	8-719-200-82	DIODE 11ES2				
D105	9-902-552-01	DIODE MA165				
D106	8-719-109-63	DIODE RD3.0ES-B2				
⚠D201	9-900-535-01	DIODE AU02Z				
D202	8-719-114-87	DIODE RD18JS-B2				
⚠D203	8-719-230-02	DIODE 30DF2				
⚠D204	8-719-982-04	DIODE ERB81-004				
⚠D205	9-900-535-01	DIODE AU02Z				
⚠D206	9-900-535-01	DIODE AU02Z				
		(FUSE)				
⚠F101	1-532-203-00	FUSE	2A		250V	
		(IC)				
⚠IC201	8-759-420-19	IC AN1431T				
⚠IC202	8-749-921-99	IC SI-3120CA				
⚠IC203	8-749-921-99	IC SI-3120CA				

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
⚠IC204	8-759-420-19	IC AN1431T				
		(COIL)				
⚠L101	9-900-520-01	LINE FILTER				
⚠L102	9-900-520-01	LINE FILTER				
L201	1-410-470-11	MICRO INDUCTOR				
		(PHOTO COUPLER)				
⚠PC101	9-902-498-11	COUPLER, PHOTO				
		(TRANSISTOR)				
⚠Q101	9-902-497-11	TRANSISTOR	2SC4231			
⚠Q102	9-900-517-01	TRANSISTOR	2SC3377			
Q202	8-729-140-98	TRANSISTOR	2SD773-5			
		(RESISTOR)				
R101	1-202-719-00	SOLID	1M		1/2W	
R102	9-902-551-11	CEMENT	4.7		2W	
R103	1-247-883-00	CARBON(SMALL)	150K	5%	1/4W	
R104	1-247-883-00	CARBON(SMALL)	150K	5%	1/4W	
R105	1-247-883-00	CARBON(SMALL)	150K	5%	1/4W	
R106	1-249-441-11	CARBON(SMALL)	100K	5%	1/4W	
⚠R107	1-215-928-11	METAL OXIDE	68K	5%	3W	
R108	1-215-864-00	METAL OXIDE	150	5%	1W	
R109	1-249-397-11	CARBON(SMALL)	22	5%	1/4W	
R110	1-249-413-11	CARBON(SMALL)	470	5%	1/4W	
R112	1-249-441-11	CARBON(SMALL)	100K	5%	1/4W	
⚠R201	1-247-727-51	CARBON	10	5%	1/2W	
R203	1-249-417-11	CARBON	1K		1/4W	
R205	1-260-083-11	CARBON	47	5%	1/2W	
R206	1-247-838-00	METAL FILM	2K	5%	1/4W	
R207	1-249-421-11	METAL FILM	1.5K	5%	1/4W	
⚠R211	9-902-485-01	FUSE	10		1/4W	F
R212	1-249-429-11	CARBPM	10K	5%	1/4W	
⚠R213	9-902-556-01	FUSE	1		1/2W	F
R214	1-249-405-11	CARBON	100	5%	1/4W	
R215	1-249-405-11	CARBON	100	5%	1/4W	
R216	1-249-417-11	CARBON	1K		1/4W	
R217	1-249-406-11	CARBON	120	5%	1/4W	
R218	1-249-421-11	METAL FILM	1.5K	5%	1/4W	
R219	1-249-421-11	METAL FILM	1.5K	5%	1/4W	
R223	1-249-410-11	CARBON	270	5%	1/4W	
		(THYRISTOR)				
⚠SCR201	8-719-107-87	THYRISTOR	03P2M			
		(TRANSFORMER)				
⚠T101	9-902-550-01	TRANS, SWITCHING				

Ref. No.	Part No.	Description	Remark
		**	
		MISCELLANEOUS *************	
5	1-466-691-21	SWITCH BLOCK, CONTROL (PS/ME MODEL)	
5	1-466-691-61	SWITCH BLOCK, CONTROL (EE MODEL)	
5	1-466-691-71	SWITCH BLOCK, CONTROL (DH MODEL)	
⚠66	1-413-718-11	POWER BLOCK (EE MODEL)	
⚠66	1-413-719-11	POWER BLOCK (EXCEPT EE MODEL)	
		**	
		ACCESSORIES & PACKING MATERIALS *******************************	
*	3-946-638-41	INDIVIDUAL CARTON (DH MODEL)	
*	3-946-638-61	INDIVIDUAL CARTON (EE MODEL)	
*	3-946-639-01	CUSHION (UPPER)	
*	3-946-640-01	CUSHION (LOWER)	
*	3-947-085-01	INDIVIDUAL CARTON (PS MODEL)	
*	3-947-085-11	INDIVIDUAL CARTON (ME1 MODEL)	
*	3-947-085-51	INDIVIDUAL CARTON (ME2 MODEL)	
	1-551-513-00	CORD, CONNECTION (PAL)	
	1-569-008-11	ADAPTER, CONVERSION 2P) (ME MODEL)	
⚠	1-574-131-21	CORD, POWER SUPPLY	
	1-693-034-21	REMOTE COMMANDER (RMT-V115A)	
	3-695-308-01	DRIVER, TUNING	
	3-754-726-11	MANUAL, INSTRUCTION (ENGLISH, CHINESE) (PS MODEL)	
	3-754-726-41	MANUAL, INSTRUCTION (ENGLISH, SPANISH, ARABIC) (ME MODEL)	
	3-754-726-61	MANUAL, INSTRUCTION (ENGLISH, CHINESE) (DH MODEL)	
	3-754-726-91	MANUAL, INSTRUCTION (ENGLISH, GERMAN, RUSSIAN, POLISH) (EE MODEL)	
		**	
		HARDWARE LIST *****************	
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#2	7-621-773-86	SCREW +PTT 2.6X4 (S)	
#3	7-621-770-87	SCREW +PTT 2.6X5 (S)	
#4	7-628-254-00	SCREW +PS 2.6X5	
#5	7-682-547-04	SCREW +PTT 3X6 (S)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
ELECTRICAL ADJUTMENTS

During the adjustment, see the parts arrangement diagram relevant to the adjustment on page 128.

Necessary items and indications for total adjustment of electric circuit of this unit will be described in this chapter.

[Instruments to be Used]

1) Color TV
2) Single or dual trace type oscilloscope, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (4 digits or more)
4) PAL pattem generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion meter
10) PAL Alignment tape
    Part code: H7099052H (MH-2)
11) SECAM pattem generator

[Connection]

Unless otherwise specified, connect and adjust the measurement equipment as follows.

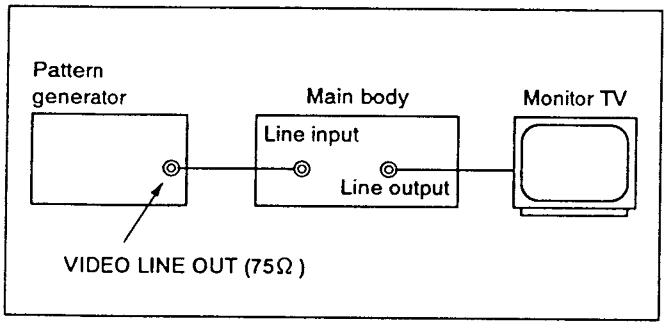

Pattern generator
Main body
Monitor TV
Line input
Line output
VIDEO LINE OUT (75Ω)

Fig. 7-1.

[Set-up for Adjustment]

The video signal from the pattem generator is used as adjustment signal for electrical adjustment. This video signal should meet the requirement. Connect the oscilloscope to the video input terminal on the MA-119 board and make sure that the amplitudes of sync signal of video signal, video portion and burst signal are flat at approximately 0.3, 0.7 and 0.3V, respectively, and that the level ratio of the burst signal and "red signal" are 0.30 : 0.66. Fig. 7-2. shows video signals (PAL color bars) used in adjusting the electrical adjustment.

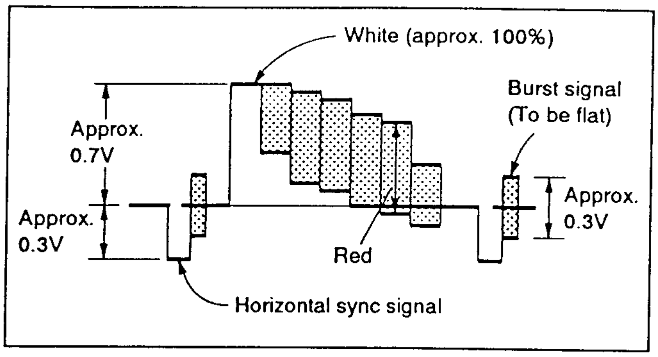

White (approx. 100%)
Burst signal (To be flat)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal

Fig. 7-2. PAL Color bar signal of pattern generator

[Alignment Tape (MH-2)]

	Mode	Time	video signal	Audio signal
1	SP	Ten minutes	Stair-step	6 kHz
2		Five minutes	——	3 kHz
3		Ten minutes	Color bar	1 kHz
4		Three minutes	RF sweep	

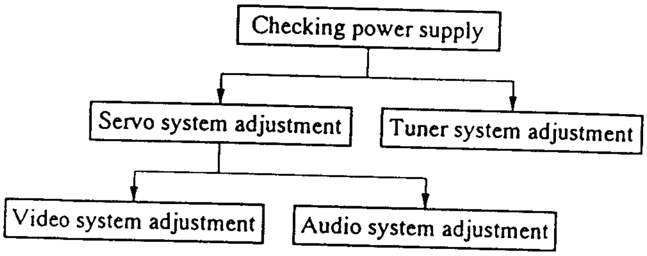
〔Specified Input/Output Level Impedance〕

Input/output terminal

VIDEO LINE IN	Pin jack Input signal: 1 Vp-p, 75Ω , unbalanced Sync negative
VIDEO LINE OUT	Pin jack Output signal: 1 Vp-p, 75Ω , unbalanced Sync negative
AUDIO LINE IN	Pin jack Input level: -7.5 dBs (0 dBs=0.775 Vrms) Input impedance: More than 47 kΩ
AUDIO LINE OUT	Pin jack Specified output: -7.5 dBs At 47 kΩ loaded. Load impedance: More than 10 kΩ

〔Adjustment Sequence〕

Make the electrical adjustment in the following sequences.



7-1. POWER SUPPLY CHECK (MA-119 BOARD)

Mode	E-E
Measurement Equipment	Digital voltmeter
UNSW 5.9V check	
Measurement Point	Pin ⑧ of CN801
Specified Value	5.9 ± 0.25 Vdc
MTR 12V check	
Measurement Point	Pin ②, ③ of CN801
Specified Value	12.3 ± 0.3 Vdc
SW 12V check	
Measurement Point	Pin ⑥ of CN801
Specified Value	12.3 ± 0.3 Vdc
SW 9V check	
Measurement Point	Pin ⑧ of IC201
Specified Value	9.0 ± 0.5 Vdc
SW 5V check	
Measurement Point	Pin ⑨ of CN801
Specified Value	5.0 ± 0.3 Vdc
+45V check	
Measurement Point	Pin ⑮ of CN801
Specified Value	43 ± 3 Vdc
-30V check	
Measurement Point	Pin ⑱ of CN801
Specified Value	-27.5 ± 2.5 Vdc
DC 3.6V check	
Measurement Point	Between Pin ⑰ and Pin ⑯ of CN801
Specified Value	3.3 ± 0.25 Vdc

Checking Method:

1) Confirm that each voltage meets the specified value.

7-2. SERVO SYSTEM ADJUSTMENT

- Make adjustment with switches set to following positions.
  COLOR SYSTEM·····················PAL/ME-SECAM

1. Switching position adjustment (MA-119 board)

Mode	Playback
Signal	Alignment tape, Stair step
Measurement Point	CH1: Pin ⑥ of CN102 (V OUT) CH2: Pin ⑤ of CN101 (RF SWP)
Measurement Equipment	Oscilloscope
Adjustment Element	RV501
Specified Value	413 ± 32 μsec (6.5 ± 0.5H)

Adjustment Method:

1) Press the tracking buttons ▼ and ▲ at a time.
2) Adjust for 413 ± 32 μsec (6.5 ± 0.5) using RV501.

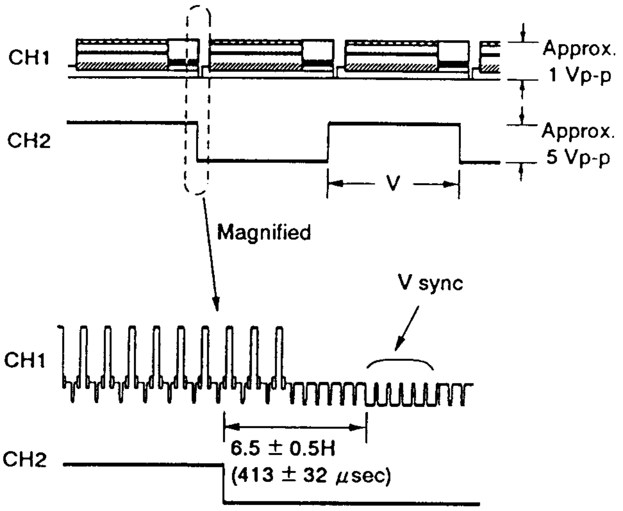


Fig. 7-3. Switching position adjustment

7-3. VIDEO ADJUSTMENT

Adjust the video system in the following sequences as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system adjustment in the recording mode. Make sure that sync and color burst signals meet requirements specified at set up of adjustment shown in Fig. 7-2.

- Make adjustment with switches set to following positions.
  COLOR SYSTEM·····················PAL/ME-SECAM
  RENTAL PICTURE··················OFF
  SHARPNESS···························CENTER CLICK

[Adjustment Sequences]

1) Crystal oscillation frequency confirmation
2) Playback Y signal level adjustment
3) Sync AGC adjustment
4) Sync tip carrier set and deviation adjustment
5) Recording chroma signal level adjustment
6) Y signal recording level check

1. Crystal oscillation frequency confirmation (YC-120 board)

Mode	Playback
Signal	Any tape
Measurement Point	Pin ㉑ of IC001
Measurement Equipment	Frequency counter, Oscilloscope
Specified Value	8867238 ± 120 Hz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Confirmation Method:

1) Make sure that the frequency is 8867238 ± 120 Hz.
2) Make sure that the amplitude is 380 ± 100 mVp-p.

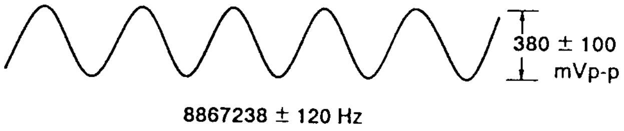


Fig. 7-4.

2. Playback Y signal level adjustment (YC-120 board)

Mode	Playback
Signal	Alignment tape, color bar
Measurement Point	Pin ⑥ of CN002 (V OUT)
Measurement Equipment	Oscilloscope
Adjustment Element	RV005
Specified Value	2.00 ± 0.02 Vp-p

Note: Make this adjustment RENTAL PICTURE OFF condition.

Adjustment Method:

1) Adjust for 2.00 ± 0.02 Vp-p using RV005.

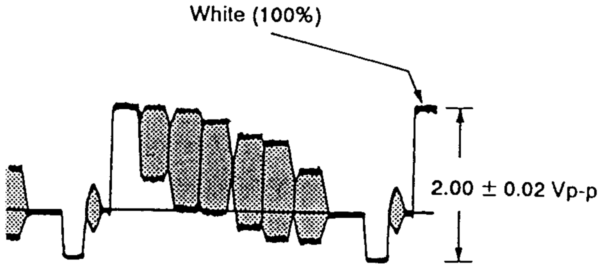


Fig. 7-5.

3. Sync AGC adjustment (YC-120 board)

Mode	Recording or EE
Signal	PAL color bar
Measurement Point	Pin ④ of IC001
Measurement	Oscilloscope
Equipment	RV003
Adjustment Element	0.50 ± 0.01 Vp-p

Adjustment Method:

1) Adjust for 0.50 ± 0.01 Vp-p using RV003.

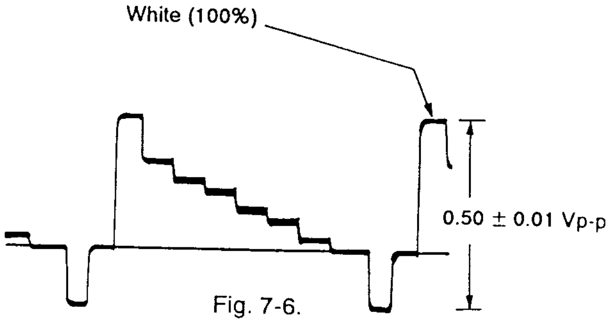


Fig. 7-6.

4. Sync tip carrier set and deviation adjustment (YC-120 board)

Before starting this adjustment, be sure to check that "2. playback Y signal level adjustment" has been completed.

Sync tip carrier set adjustment	
Mode	E-E
Signal	No signal
Measurement Point	Pin ㊵ of IC001 (REC Y)
Measurement Equipment	Frequency counter
Adjustment Element	RV002
Specified Value	3.80 ± 0.05 MHz
Deviation adjustment	
Mode	Recording and playback
Signal	PAL color bar
Measurement Point	Pin ⑥ of CN002 (V OUT)
Measurement Equipment	Oscilloscope
Adjustment Element	RV004
Specified Value	2.00 ± 0.02 Vp-p

Note: Make this adjustment RENTAL PICTURE OFF condition.

Adjustment Method:

1) Make no signal state and select the E-E mode.
2) Connect the frequency counter to the Pin ㊵ of IC001 and adjust for 3.80 ± 0.05 MHz using RV002.
3) Input the color bar signal to make recording.
4) Playback the recorded tape portion and check the play back Y signal level of the Pin ⑥ of CN002.
   Specification: Should be 2.00 ± 0.02 Vp-p.
5) If does not meet the specification, repeat 1) to 4) after adjusting RV004.

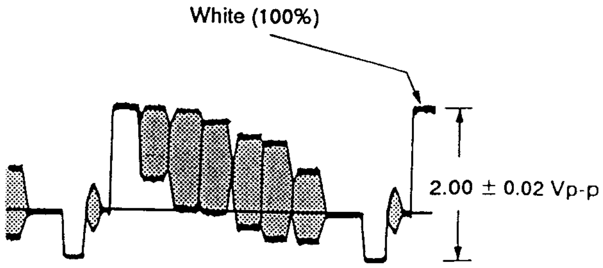


Fig. 7-7.

5. Recording chroma signal level adjustment (YC-120 board)

Mode	E-E
Signal	PAL color bar
Measurement Point	Pin ① of CN001 (REC C)
Measurement Equipment	Oscilloscope
Adjustment Element	RV006
Specified Value	105± 5 mVp-p

Adjustment Method:

1) Adjust the color bar "red" level to 105 ± 5 mVp-p using RV006.

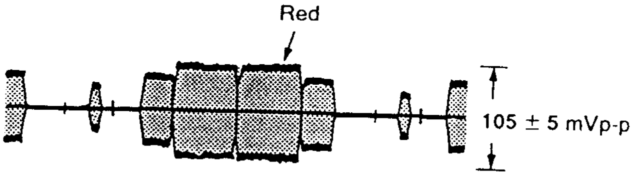


Fig. 7-8.

6. Y signal recording level check (YC-120 board)

Mode	Recording
Signal	No signal
Measurement Point	Pin ⑩ of CN001 (Y REC)
Measurement Equipment	Oscilloscope
Specified Value	340 ± 80 mVp-p

Checking Method:

1) Confirm that the REC Y level is 340 ± 80 mVp-p.

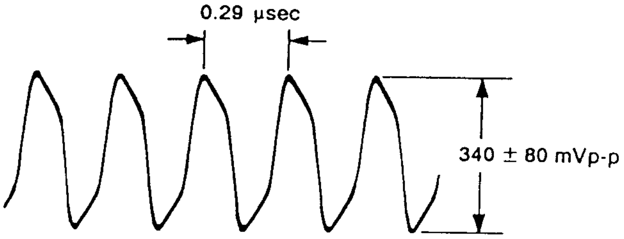


Fig. 7-9.

7. AFC adjustment (YC-120 board)

Mode	E-E
Signal	PAL color bar
Measurement Point	Pin ⑦ of IC003
Measurement Equipment	Frequency counter
Adjustment Element	RV007
Specified Value	15745 ± 45 Hz

Connection:

1) Connect pin ⑮ of IC003 and pin ⑩ (5V) of IC003 with a jumper wire.

Adjustment Method:

1) Adjust for 15745 ± 45 Hz using RV007.

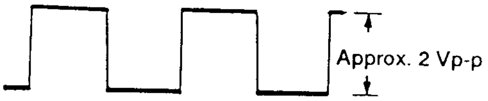


Fig. 7-10.

8. SECAM DET adjustment (YC-120 board)

Mode	E-E
Signal	SECAM color bar
Measurement Point	Pin ⑪ of IC004
Measurement Equipment	Oscilloscope
Adjustment Element	RV008
Specified Value	4.9 ± 0.1 Vdc

Adjustment Method:

1) Adjust for 4.9 ± 0.1 Vdc using RV008.

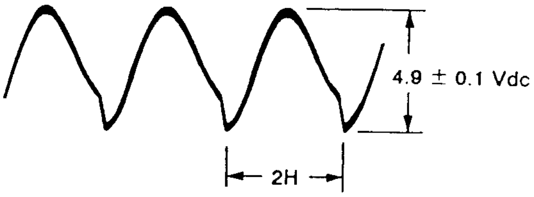


Fig. 7-11.

7-4. AUDIO SYSTEM ADJUSTMENT

〔Connection〕

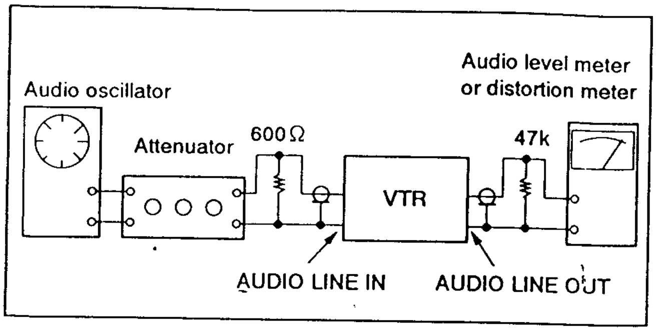


Fig. 7-12.

- Make adjustment with switches set to following positions.
  COLOR SYSTEM·····················PAL/ME-SECAM

〔Adjustment Sequence〕

1) ACE head adjustment
   ...See "VHS MECHANICAL ADJUSTMENT MANUAL III".
2) Playback output level check
3) E-E output level check
4) Recording bias adjustment
5) Overall level characteristic and distortion factor check
6) Overall S/N check

1. ACE head adjustment

See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ ".

2. Playback output level check

Mode	Playback
Signal	Alignment tape, 1 kHz (color bar) portion
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	−12.5 ± 2 dBs

Confirmation Method:

1) Playback 1 kHz portion and make sure that AUDIO LINE OUT signal level is −12.5 ± 2 dBs.

3. E-E output level check

Mode	E-E
Signal	400 Hz, −7.5 dBs
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	−7.5 ± 2 dBs

Confirmation Method:

1) Input signal of 400 Hz, −7.5 dBs to AUDIO LINE IN.
2) Make sure that AUDIO LINE OUT signal level is −7.5 ± 2 dBs.

4. Recording bias adjustment

Mode	Recording and playback (SP mode)
Signal	400 Hz, −27.5 dBs 7 kHz, −27.5 dBs
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Adjustment Element	RV201
Specified Value	0 ± 3 dB

Note: Tape path adjustment should have been completed.

Adjustment Method:

1) Input signal of 400 Hz, −27.5 dBs.
2) Make recording.
3) Set the AUDIO LINE IN signal to 7 kHz, −27.5 dBs and make recording.
4) Playback a recorded portion and measure output levels at 400 Hz and 7 kHz.
5) Confirm that the 7 kHz playback signal level is within a range of 0 ± 3 dB against the 400 Hz playback signal level . When beyond this range, adjust RV201 and repeat the steps (1) through (5).

5. Overall level characteristic and distortion factor check

Mode	Recording and playback (SP mode)
Signal	AUDIO LINE OUT terminal
Measurement Point	Audio level meter and distortion meter
Measurement Equipment	Playback level:–7.5 ± 2 dBs
Specified Value	Distortion factor: 4% or less

Adjustment Method:

1) Input audio signal of 400 Hz, –7.5 dBs to AUDIO LINE IN.
2) Make recording.
3) Playback the recorded portion.
4) Make sure that playback level is –7.5 ± 2 dBs.
5) Make sure that distortion factor is within 4%.

6. Overall S/N check

Mode	Recording and playback (SP mode)
Signal	No signal
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	Less than –46 dBs

Confirmation Method:

1) Make no signal input.
2) Make recording.
3) Playback the recorded portion.
4) Confirm that the noise level is less than –46 dBs.

7-5. TUNER SYSTEM ADJUSTMENT

7-5-1. RF AGC Adjustment (TU701)

Signal	Broad cast TV signal
Adjustment Element	RV on TU701

Adjustment Method:

1) Adjust the monitor TV to a maximum contrast.
2) Turn the RV on TU701 to make snow noise visible.
3) Turn the RV on TU701 in an opposite direction and set it to the point where the snow noise disappears.
4) Receive each channel and confirm that there are no beat picture or snow noise due to cross modulation.

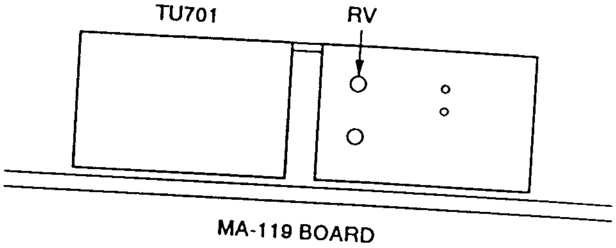
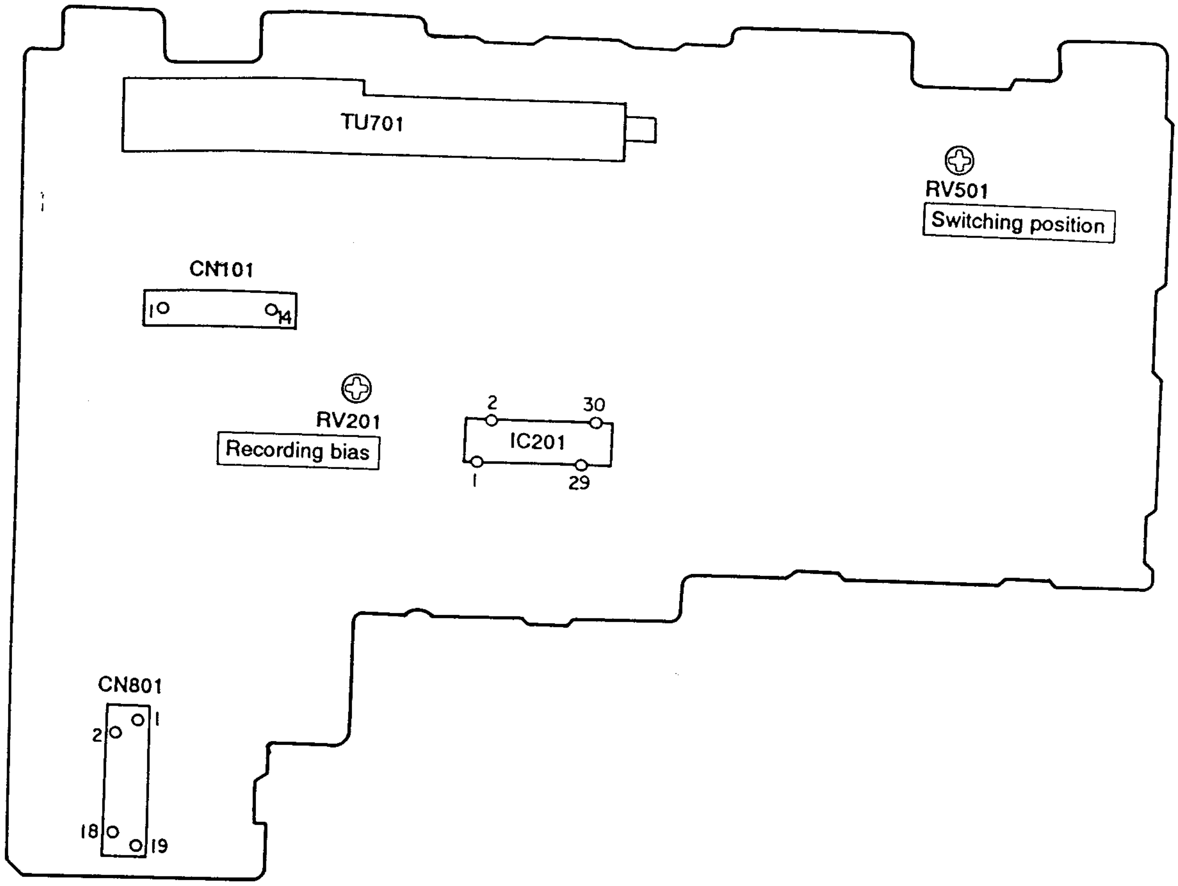


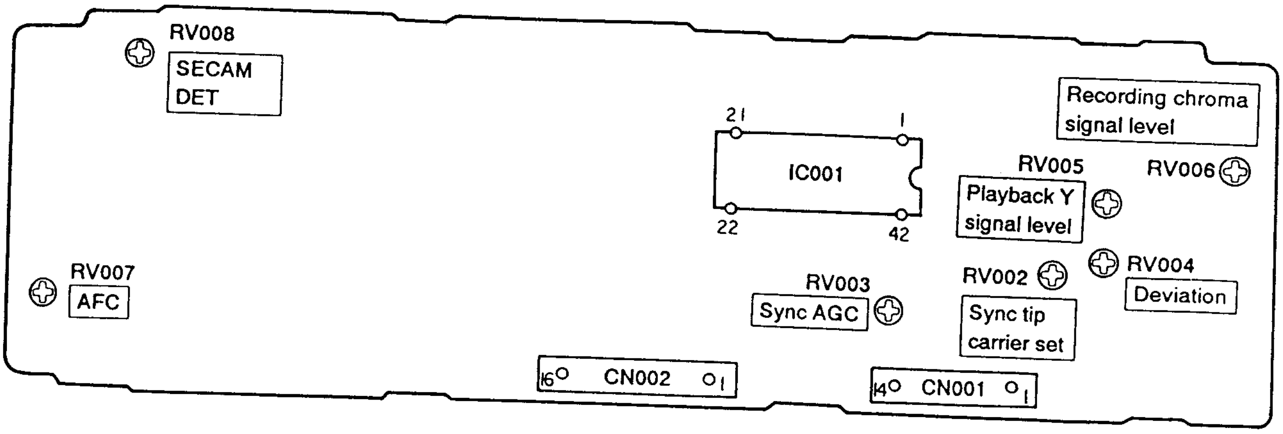
Fig. 7-13.

7-6. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

MA-119 BOARD (COMPONENT SIDE)


TU701
RV501
Switching position
CN101
1
14
RV201
Recording bias
IC201
2
30
1
29
CN801
2
1
18
19

YC-120 BOARD (COMPONENT SIDE)


RV008
SECAM DET
Recording chroma signal level
21
1
IC001
22
42
RV005
Playback Y signal level
RV006
RV007
AFC
RV003
Sync AGC
RV002
Sync tip carrier set
RV004
Deviation
16
CN002
1
14
CN001
1